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EXPERIMENTAL STRESS ANALYSIS FOR ALVIN HULL NUMBER 2

E. M. Briggs
R. C. DeHart

PROJECT NO. 03-1206

Revision
May 1964

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	25 Sep 69

SOUTHWEST RESEARCH INSTITUTE
8500 Culebra Road, San Antonio, Texas

EXPERIMENTAL STRESS ANALYSIS FOR ALVIN HULL NUMBER 2

SwRI Project No. 03-1206

for

Litton Systems, Inc. - P. O. No. ED-94657
Applied Science Division--2003 E. Hennepin
Minneapolis 13, Minnesota

Under Contract (P. O. 18284) with
Woods Hole Oceanographic Institution
Woods Hole, Massachusetts

Funded under Prime Contract Nonr 3484(00) with:

The Office of Naval Research
Department of the Navy
Code 466--Washington 25, D. C.

MBL/WHOI
0 0301 0043052 6

APPROVED:

Robert C DeHart

Robert C. DeHart, Director
Department of Structural Research

Revision
May 1964

I. INTRODUCTION

This report presents the results of the experimental stress analysis of the Hull No. 2 of the Alvin series. All attachments to the submarine hull were installed prior to conducting the test.

II. INSTRUMENTATION

A total of 74 locations were strain gaged, 38 inside and 36 outside with two gage 90° rosettes. The strain gages were located as shown in Figure 1.

The gages were micro-measurement EA-06-12STA-120 and were bonded on by Eastman 910 cement. A 48-channel Gilmore strain recorder was used to record the strains. The Alvin was first cycled to 500 psi four times to stabilize the gages.

III. DESCRIPTION OF THE PRESSURIZATION TESTS

The hull of the Alvin was tested in the 90" inside diameter test tank at Southwest Research Institute.

The hull was seated on a steel ring frame and held in place by 2,650 lbs. of weight placed inside the hull on a temporary

wooden floor. The leads from the inside gages were brought through the hull in the 18 single lead hull penetrators that will be used on the completed submarine.

Since only a 48-channel Gilmore strain recorder was available, the following procedure was used to record strains. The gages were connected into 6 cables with each cable containing 24 gages. Two cables at a time were attached to the Gilmore and the gage circuits balanced. Strains were recorded for the gages connected to these cables at 330 psi increments until the maximum pressure was attained. Then the pressure was released and strains taken at several intervals until the pressure on the hull was again zero. These two cables were then disconnected, the next two connected to the Gilmore, and the process repeated. A single channel strain indicator wired through a switching box and hand recorded was used on the remaining four gages. The process was repeated three times in order to record strains from all 148 gages.

All strains were recorded at pressure increments of 330 psi up to the maximum of 3,300 psi. Strains were also recorded at 1,650 and 0 on the way down.

IV. ULTRASONIC TESTING

Hull number two was completely tested by the ultrasonic method. A number of small flaws in the welds were located, most of which were in the insert welds. These flaws were believed to be welding cracks and slag accumulations in the insert welds.

V. PRESENTATION OF DATA

The data is presented in the same form as received from the computer. Sigma 1 is the principal stress in the leg 1 direction and sigma 2 is the principal stress 90° to sigma 1. Sens 1 and Sens 2 are the strains, respectively, to sigma 1 and sigma 2.

It is assumed that either leg 1 or 2 is on the principal stress line on two gage rosettes. The plot of the data which is reproduced below the data listing has sigma 1 as the abscissa and pressure as the ordinate.

The gage locations can be determined from Figure 1. The nomenclature of the numbering system was as follows: The last number or numbers signify gage location, the middle number indicates inside or outside -3 inside, 4 outside. The first number is the area location identifier. Leg 1 is always on the strain gage line. The strain gage line is either the line

through which a number of gages in an area are laid or, in the case of a single rosette, on a line through the hatch.

VI. CONCLUSIONS

The strain gage data was linear. When reduced, the principal stress in most areas was very close to the theoretical. In some areas, particularly between inserts, the strains were generally 10-15% higher than expected. The stress versus gage number for the various areas are found in Figures 4-13, plotted for a pressure of 3300 psi.

The load was apparently not ideally transmitted across the hatch, see Figure 8. This was probably due to the addition of an 0.-ring and slight misalignment of the hatch.

After all the gage readings had been recorded it was found that two of the electrical hull penetrators leaked. They were replaced and the vessel repressurized to 3300 psi. The penetrators did not leak during this test. Subsequently, all penetrators have been modified to enable better seating.

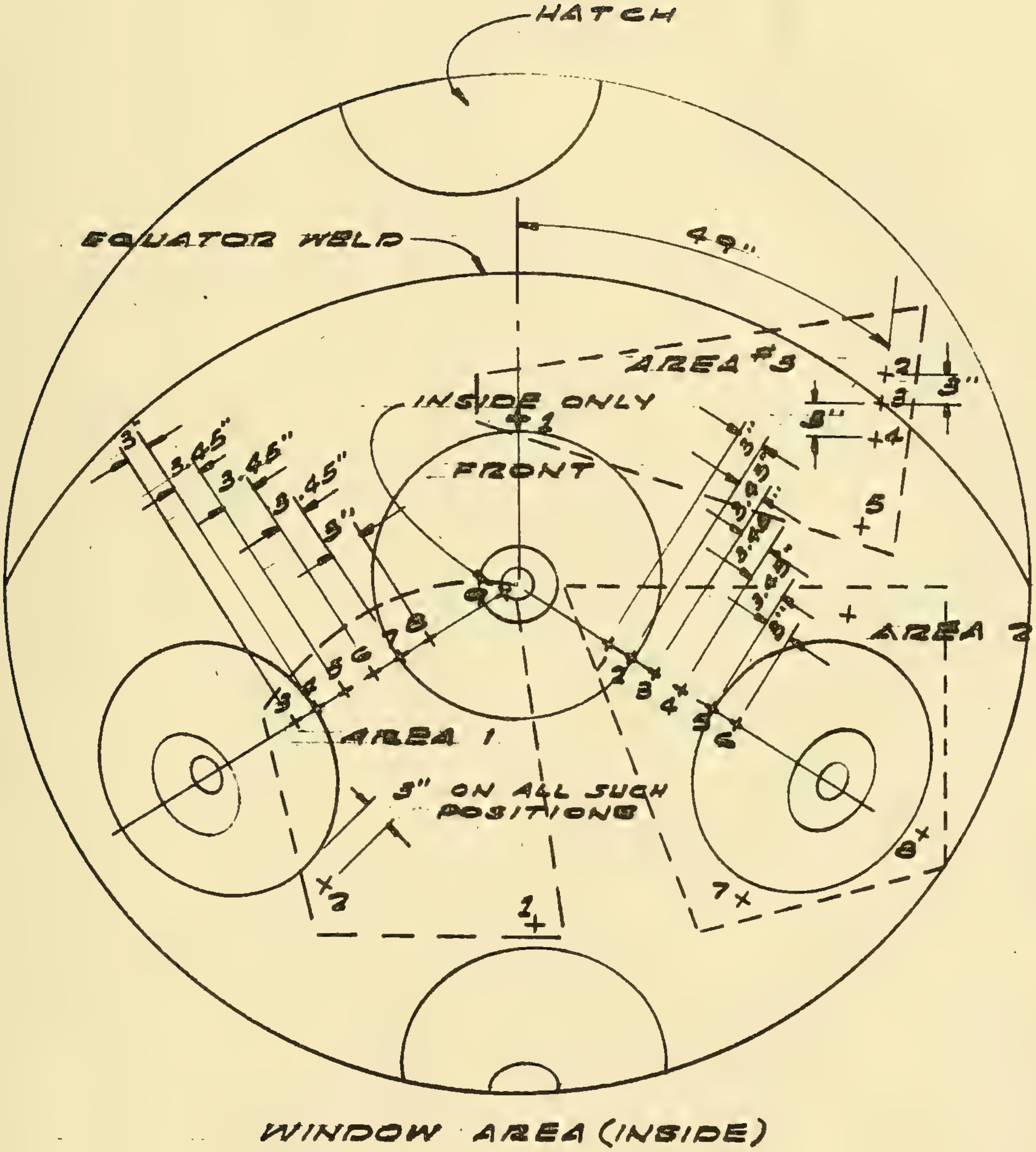

FIGURE 1 a

WINDOW AREA STRAIN GAGE LAYOUT

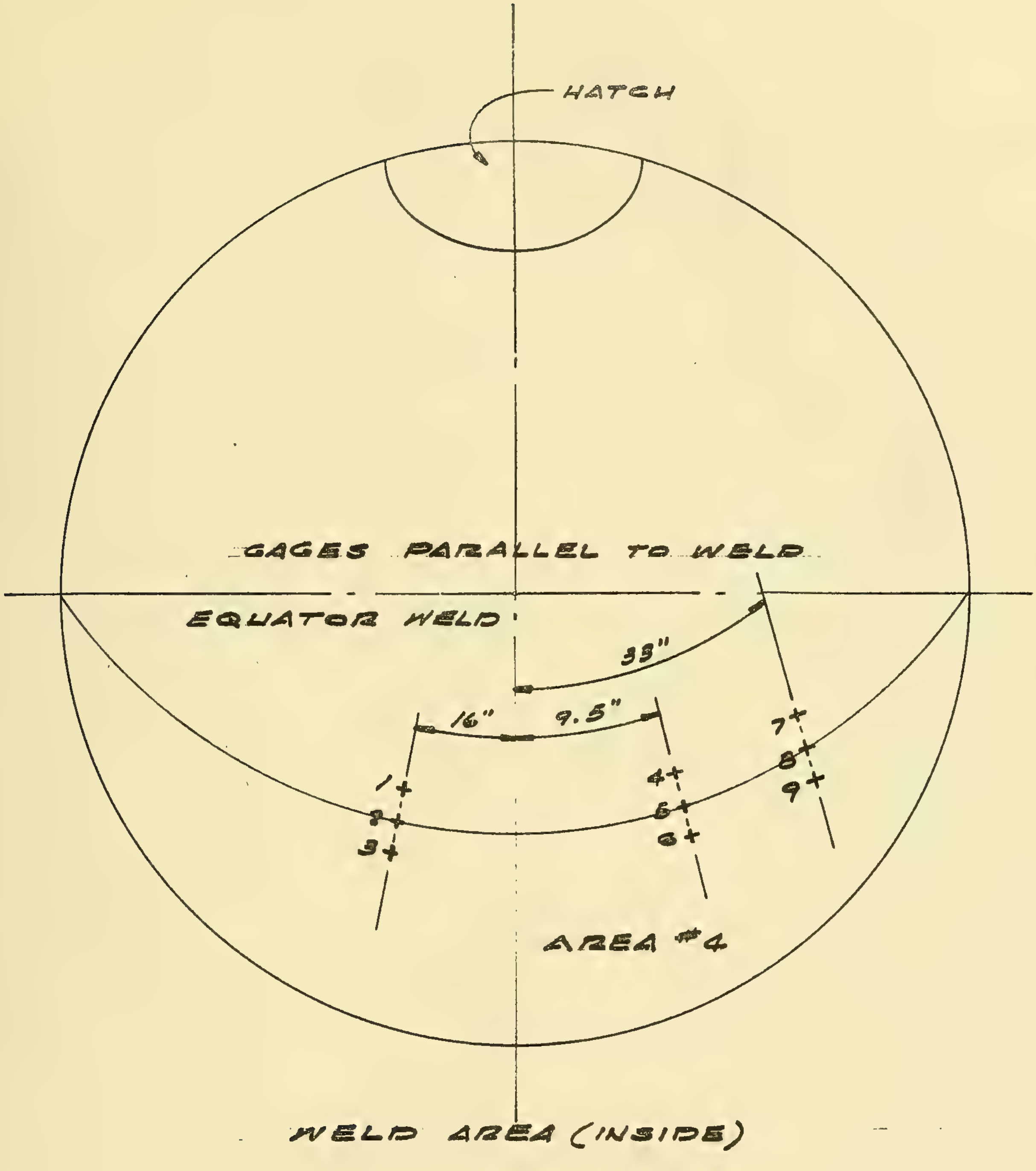

FIGURE 1 b

EQUATOR WELD AREA FLAT SPOT GAGE LAYOUT

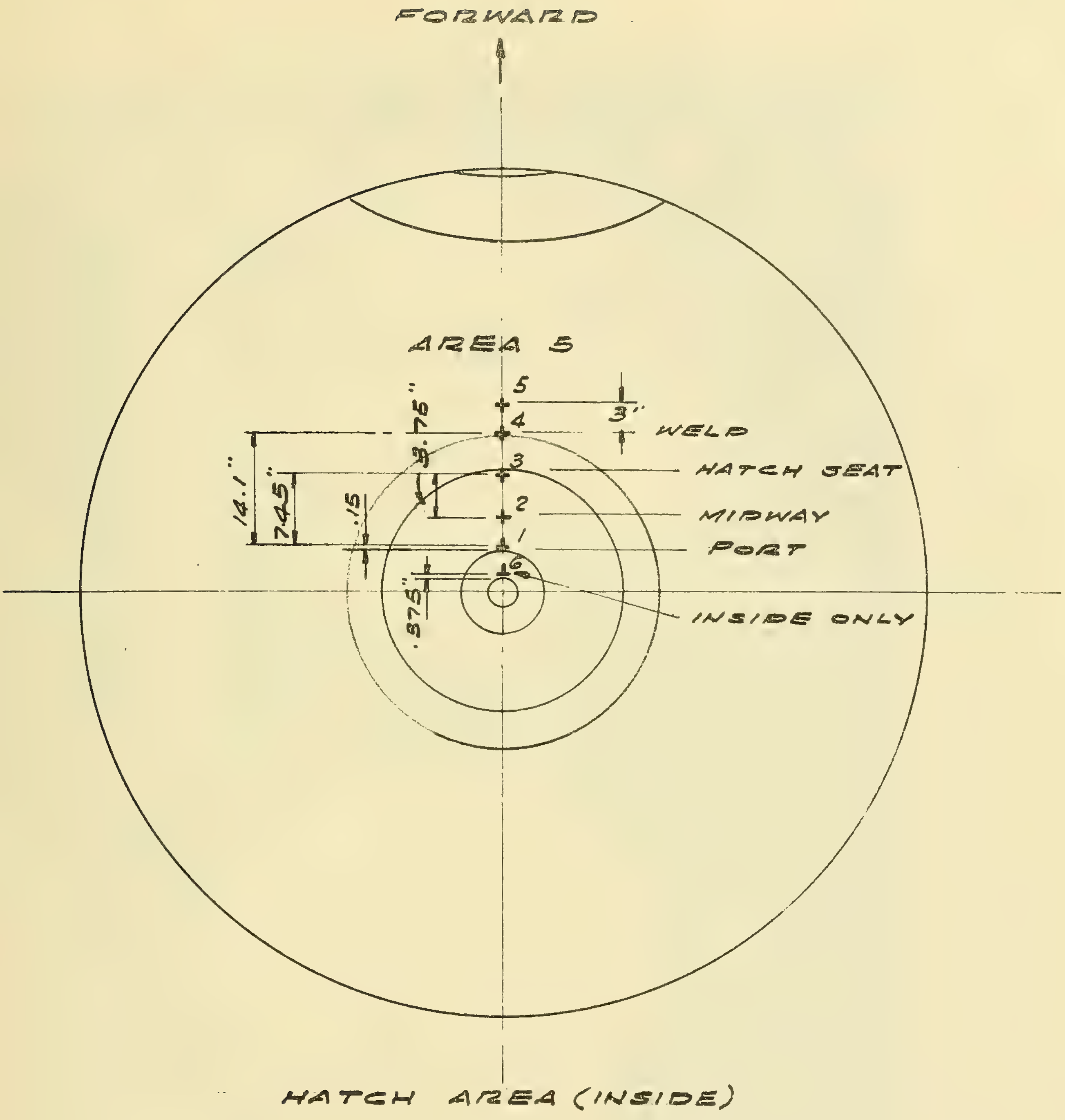

FIGURE 1 c

HATCH AREA STRAIN GAGE LAYOUT

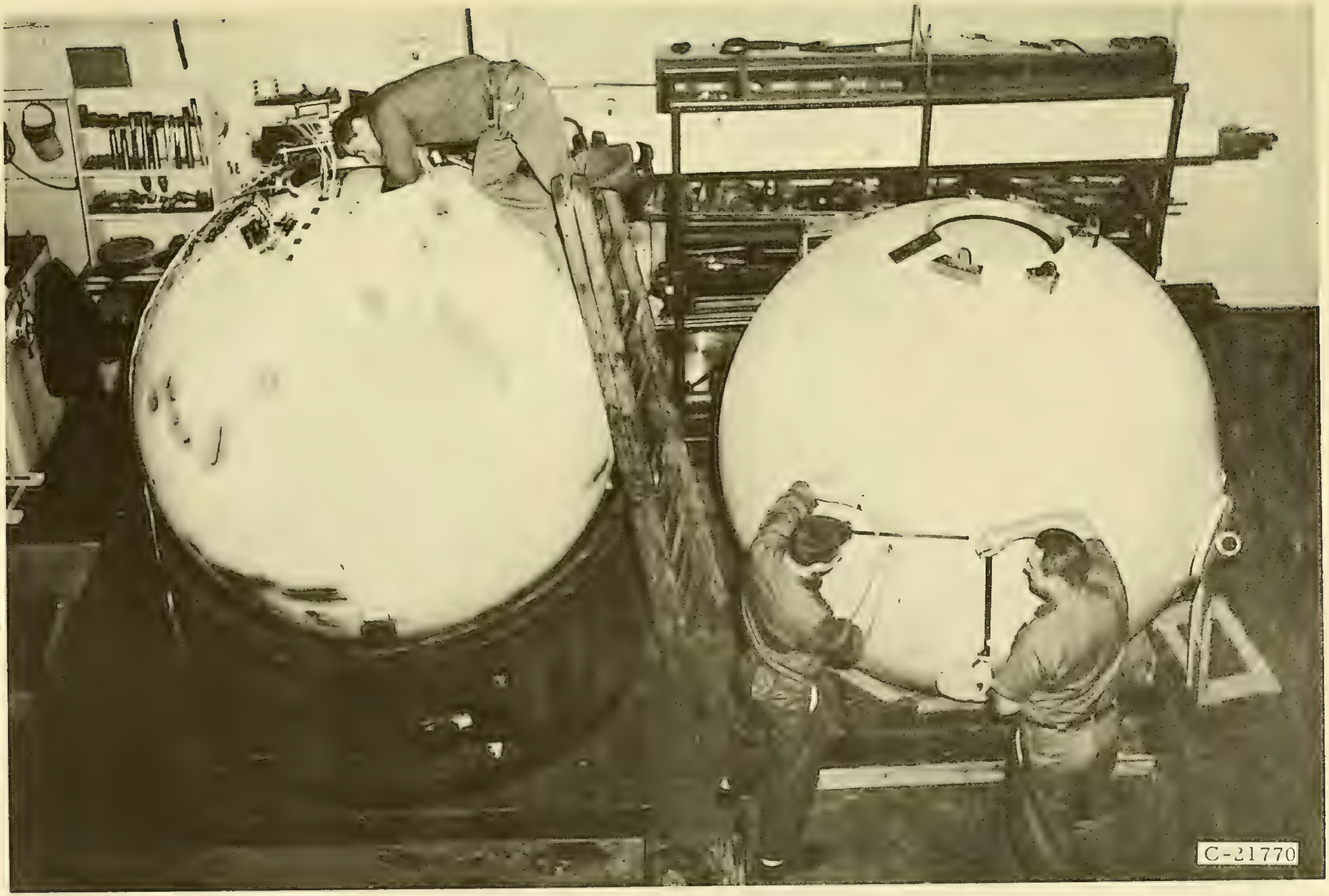

FIGURE 2. VIEW SHOWING HULL NO. 1 BEING RE-STRAIN GAGED AND HULL NO. 2 BEING STRAIN GAGED (Left to Right).

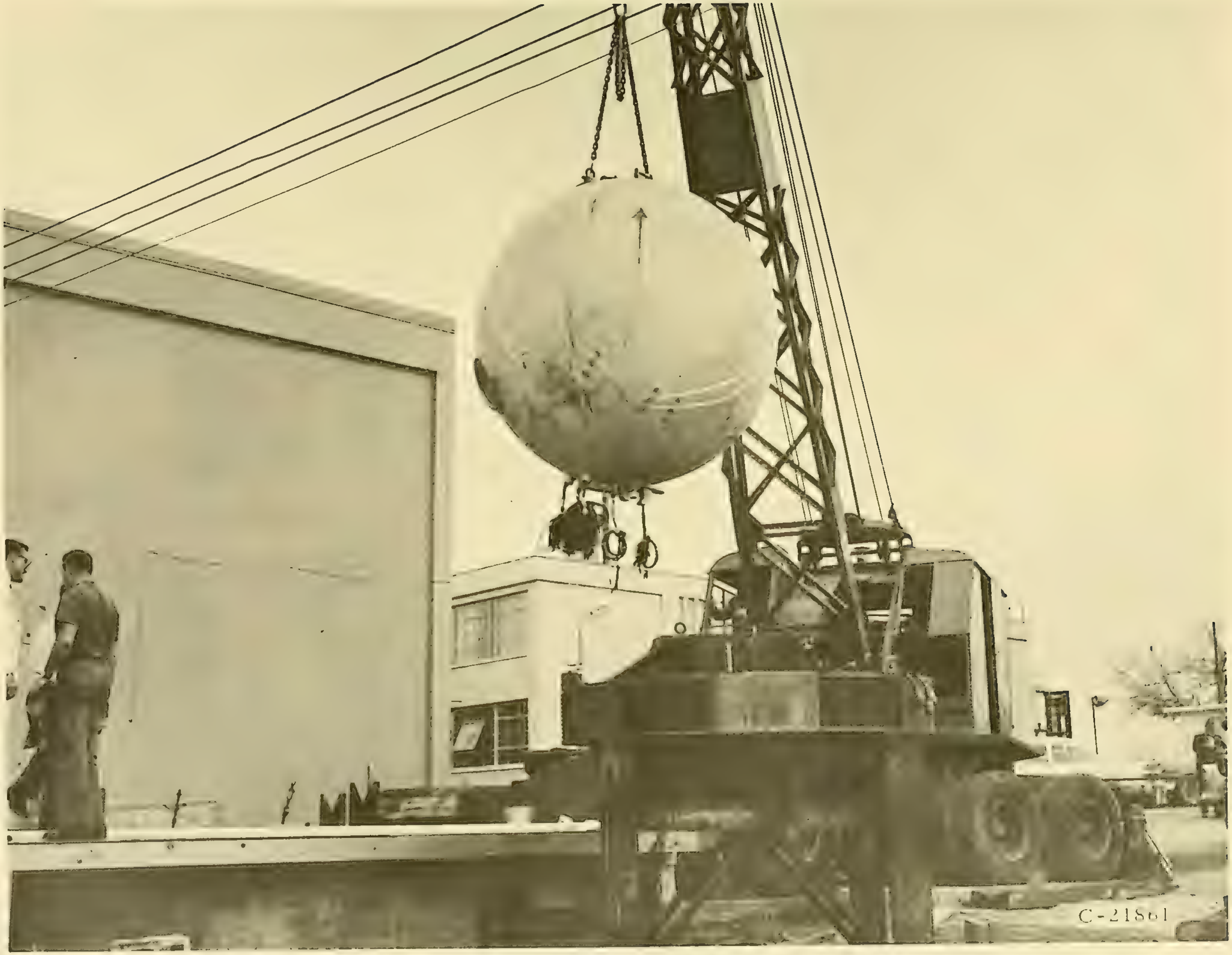

FIGURE 3. HULL NO. 2 BEFORE PLACING IN TEST FACILITY

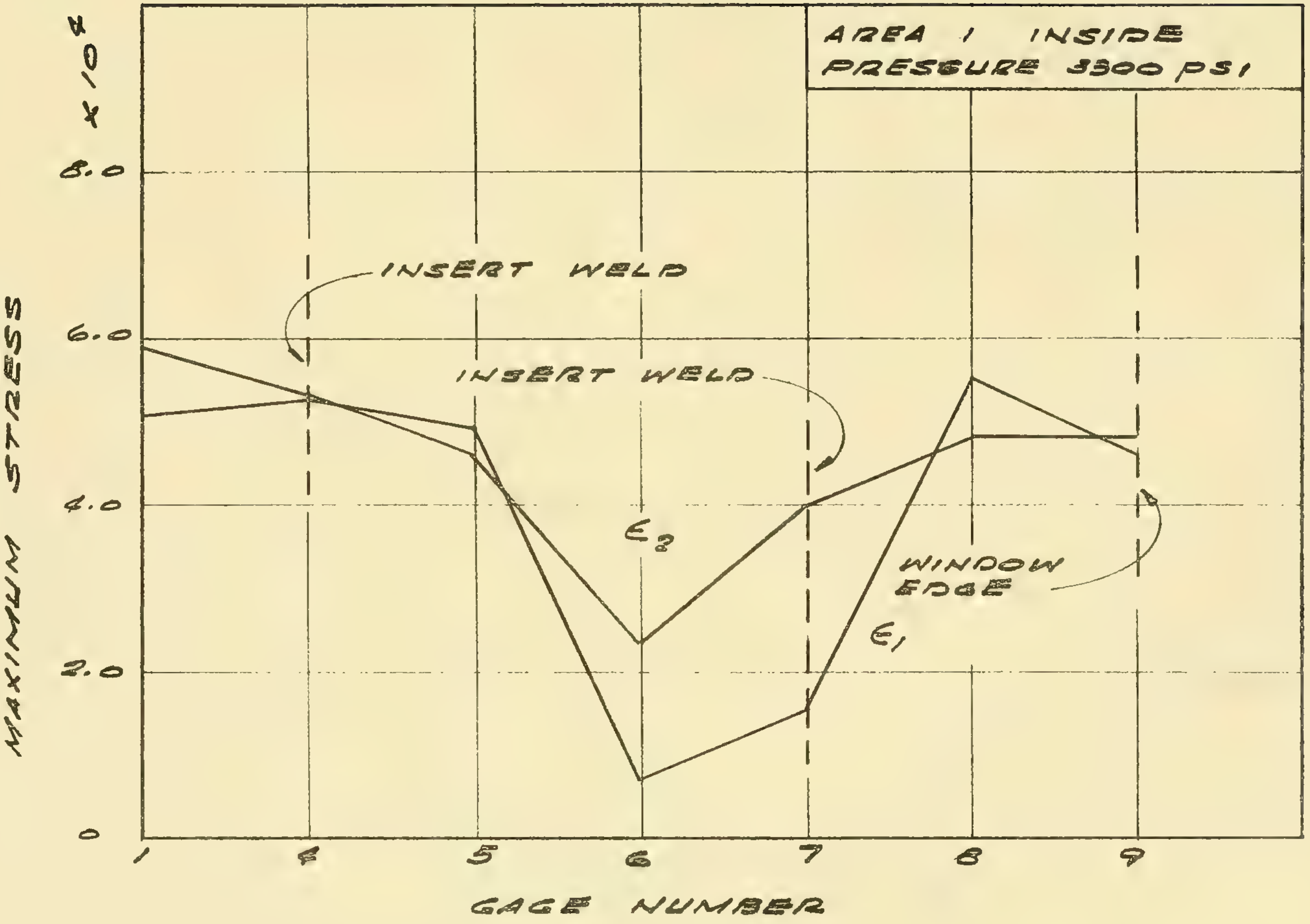

FIGURE 4

Maximum Stress Versus
Gage Location for Area 1 Inside

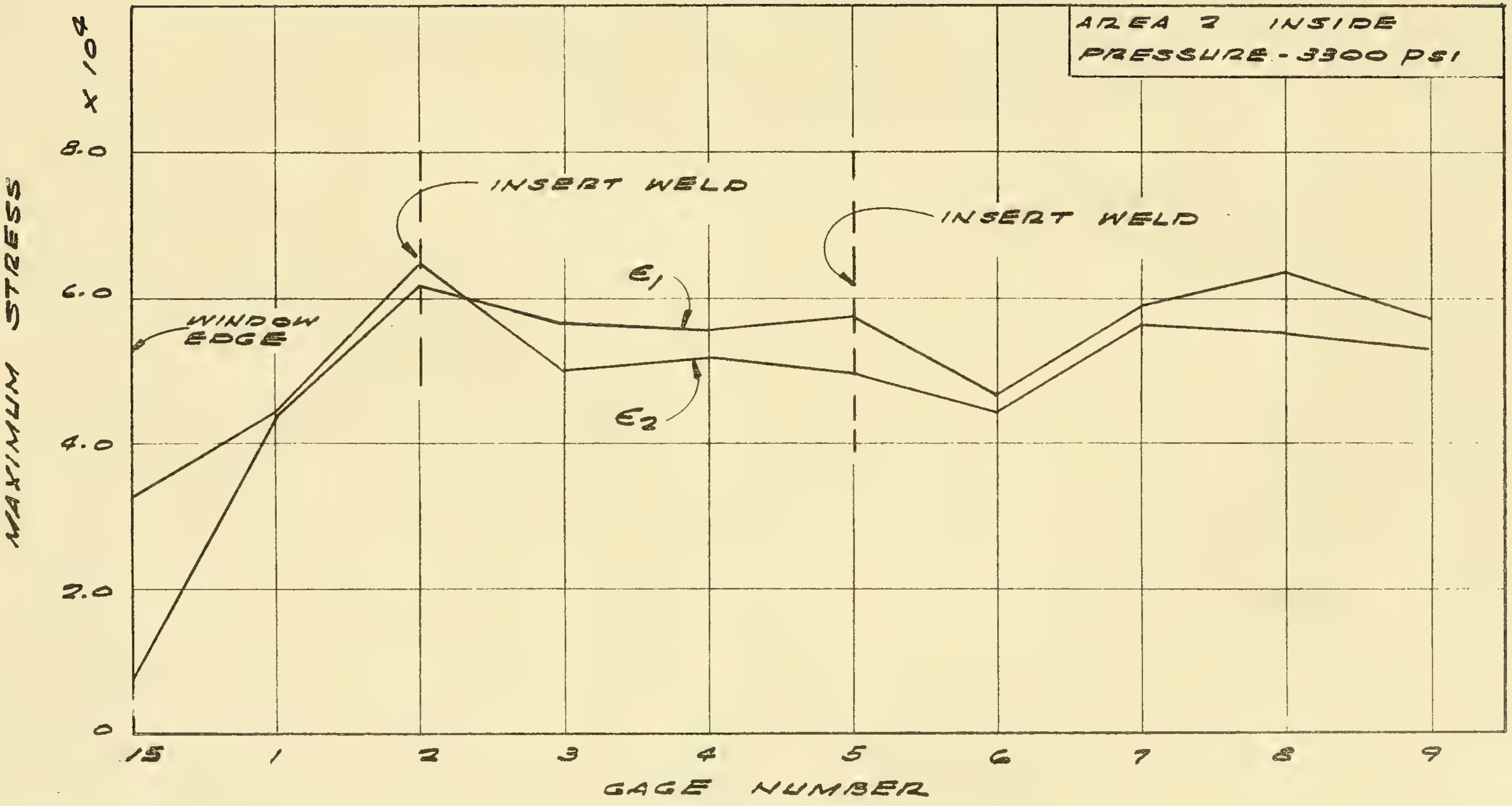

FIGURE 5

Maximum Stress Versus
Gage Location for Area 2 Inside

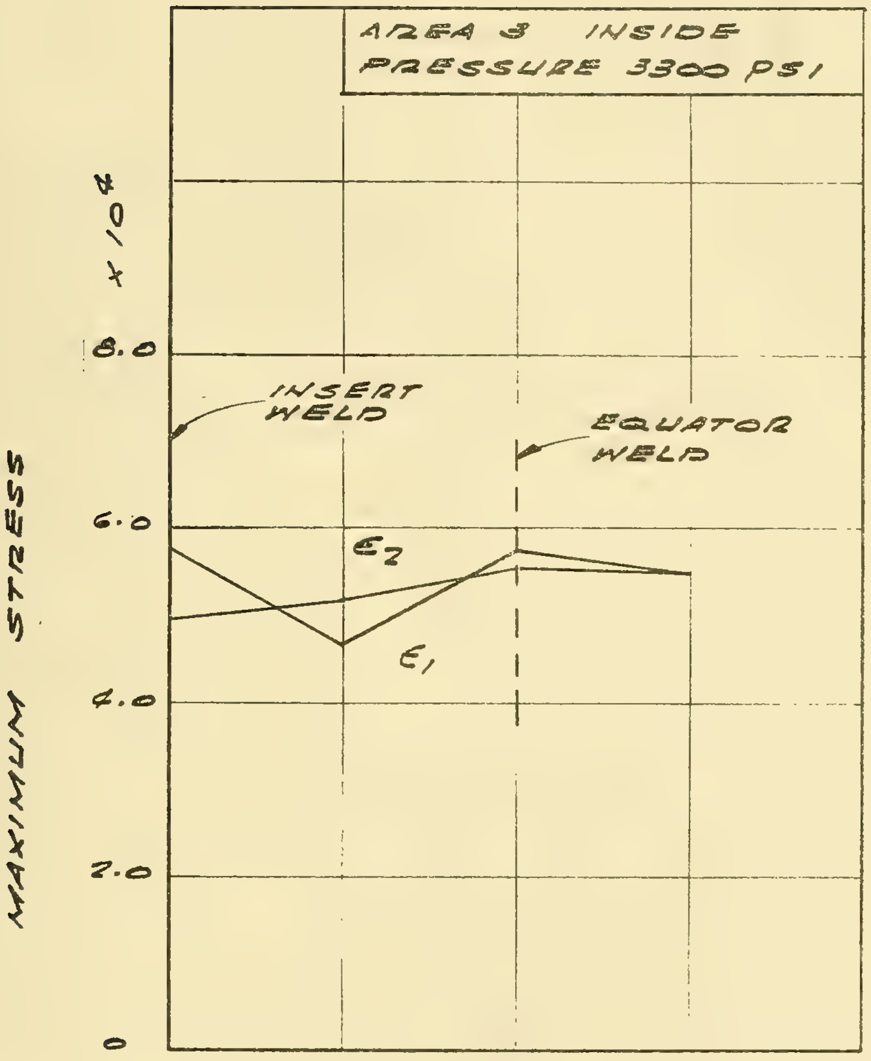

FIGURE 6

Maximum Stress Versus
Gage Location for Area 3 Inside

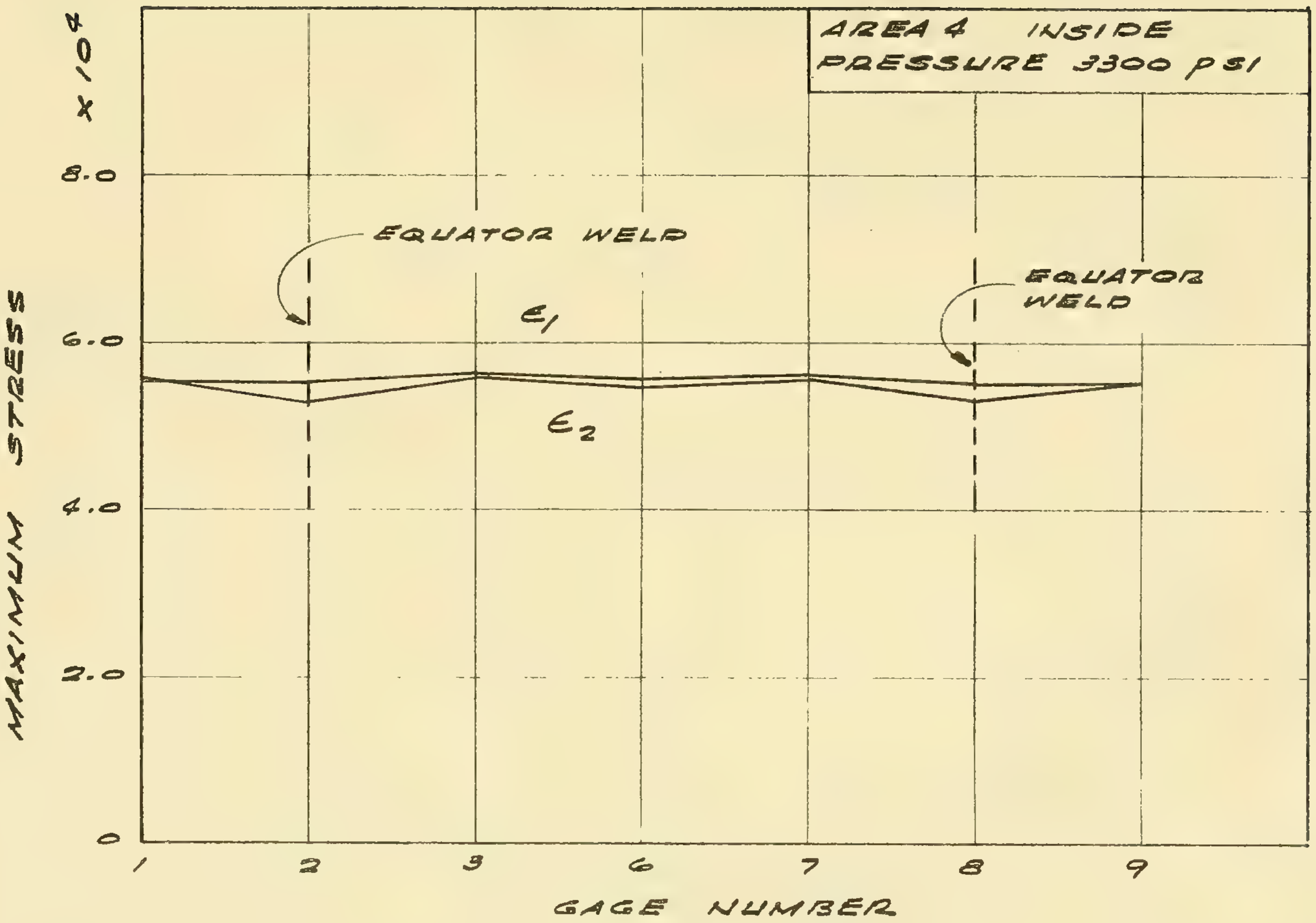

FIGURE 7
Maximum Stress Versus
Gage Location for Area 4 Inside

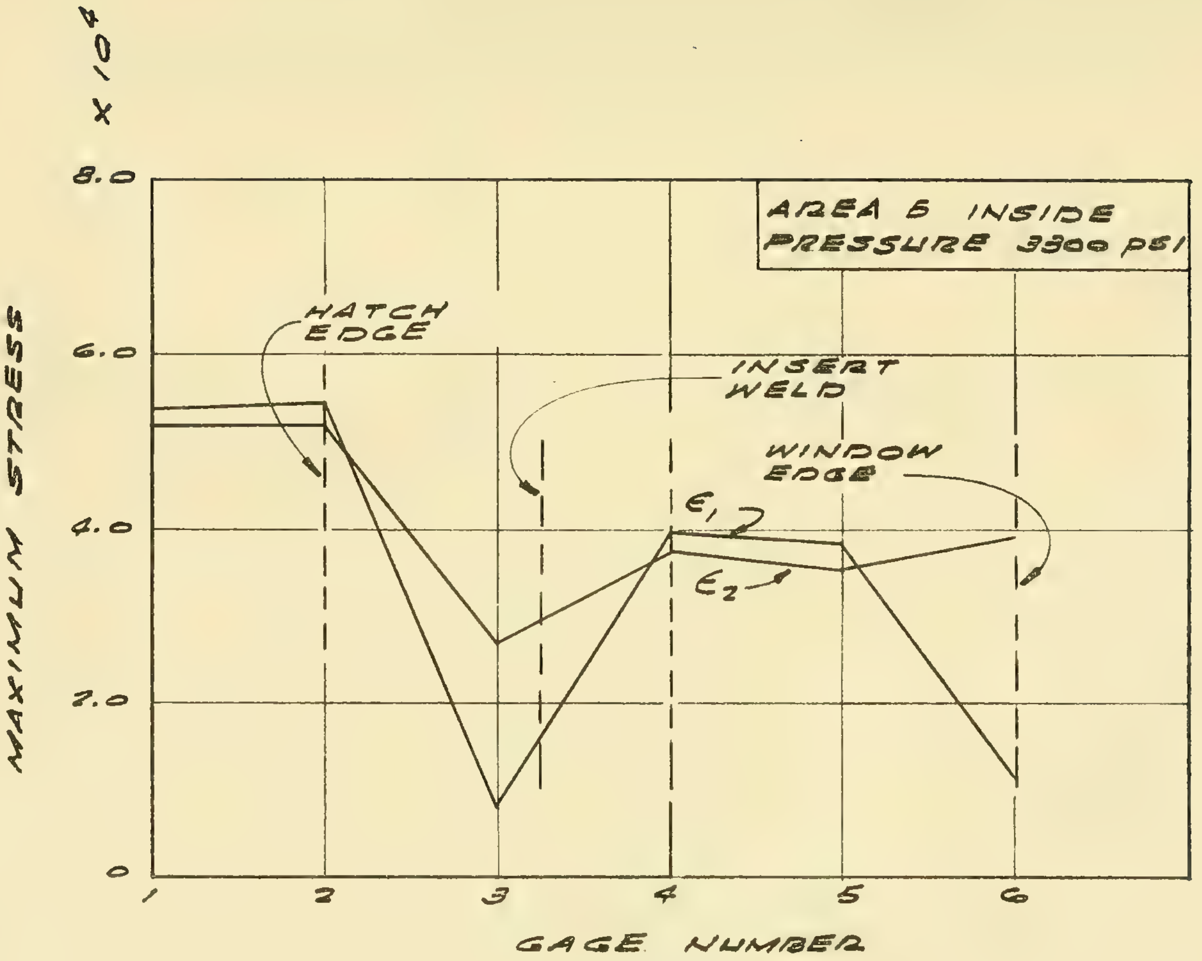

FIGURE 8
Maximum Stress Versus
Gage Location for Area 5 Inside

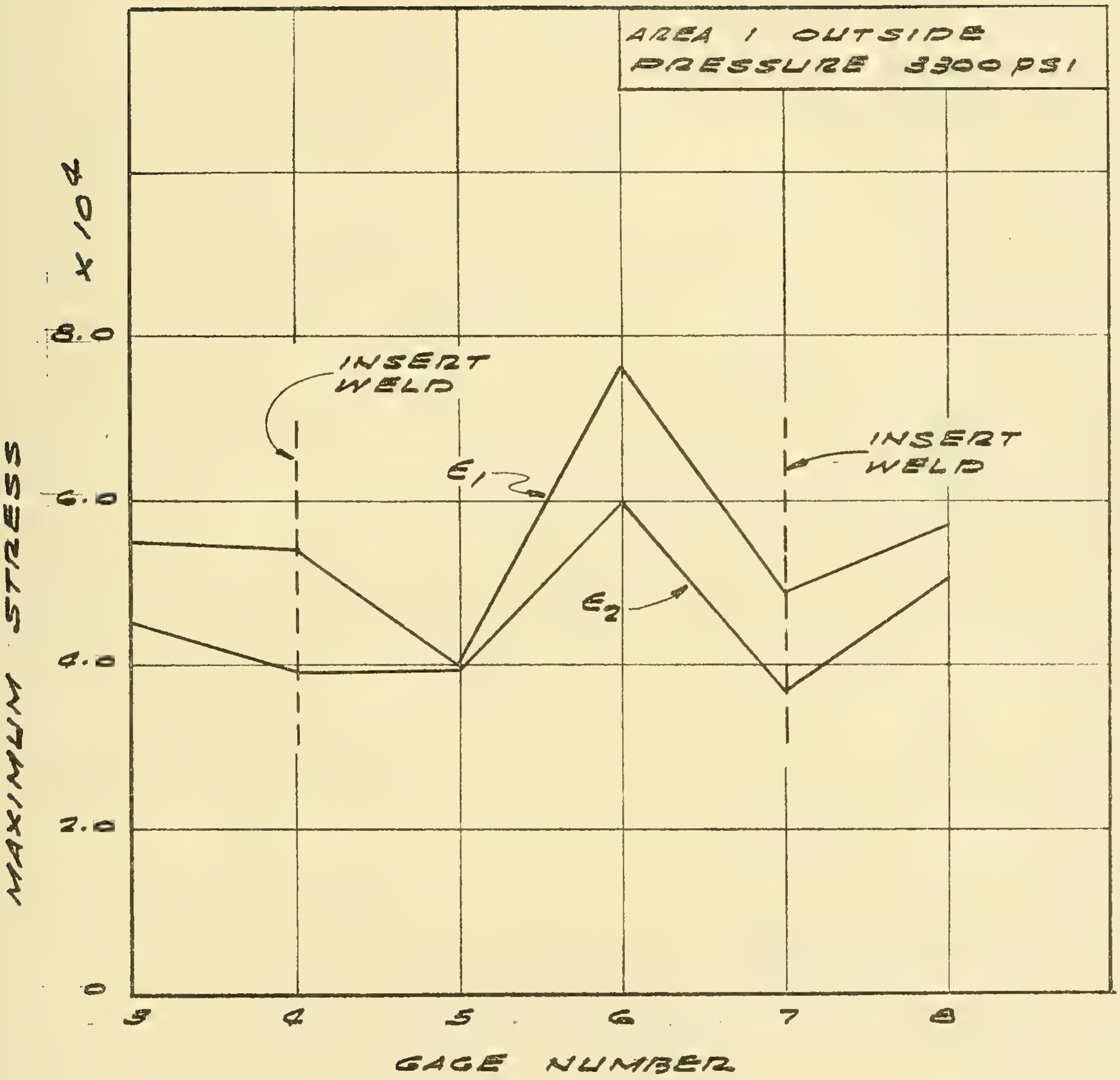

FIGURE 9
Maximum Stress Versus
Gage Location for Area 1 Outside

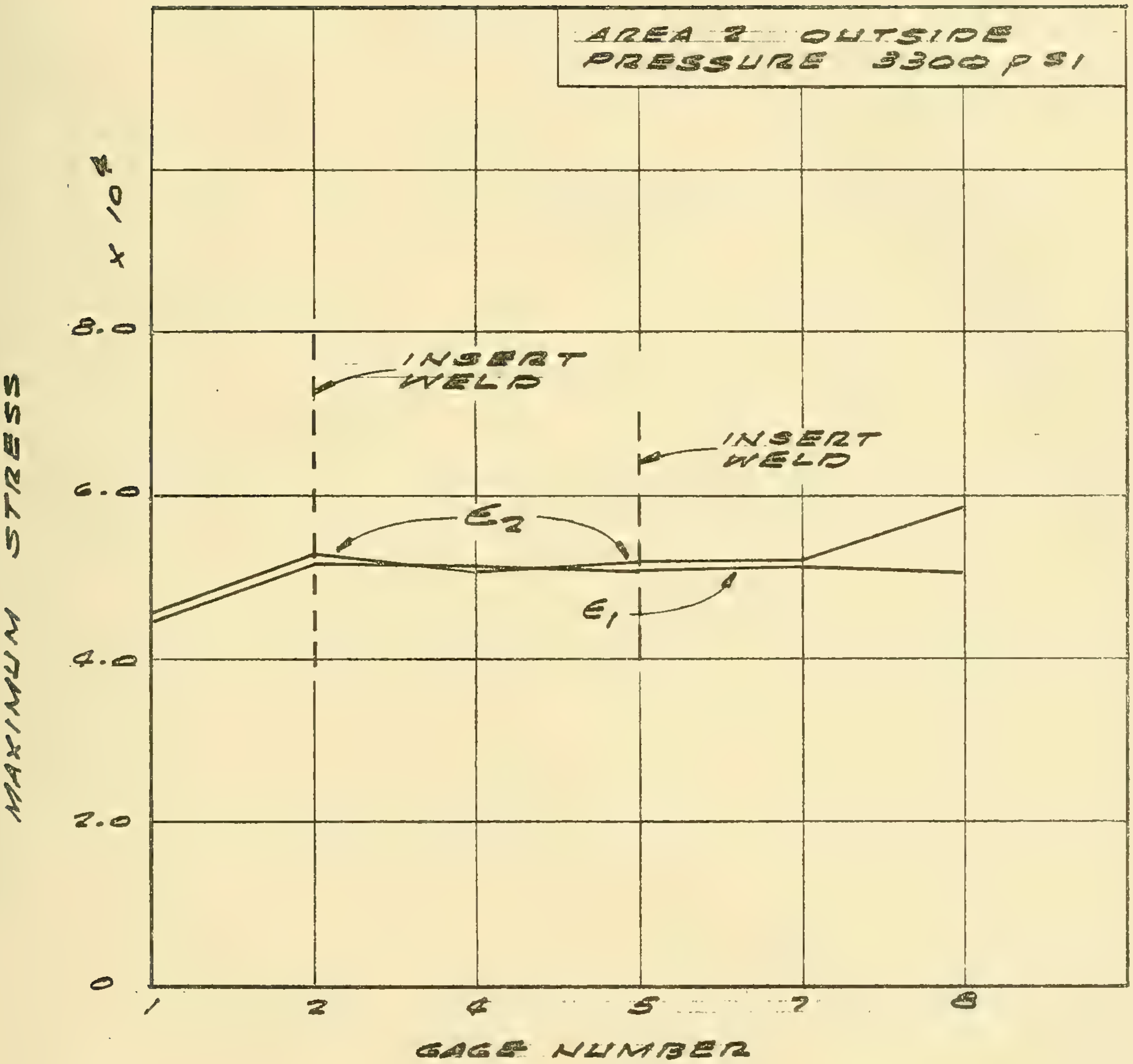

FIGURE 10

Maximum Stress Versus
Gage Location for Area 2 Outside

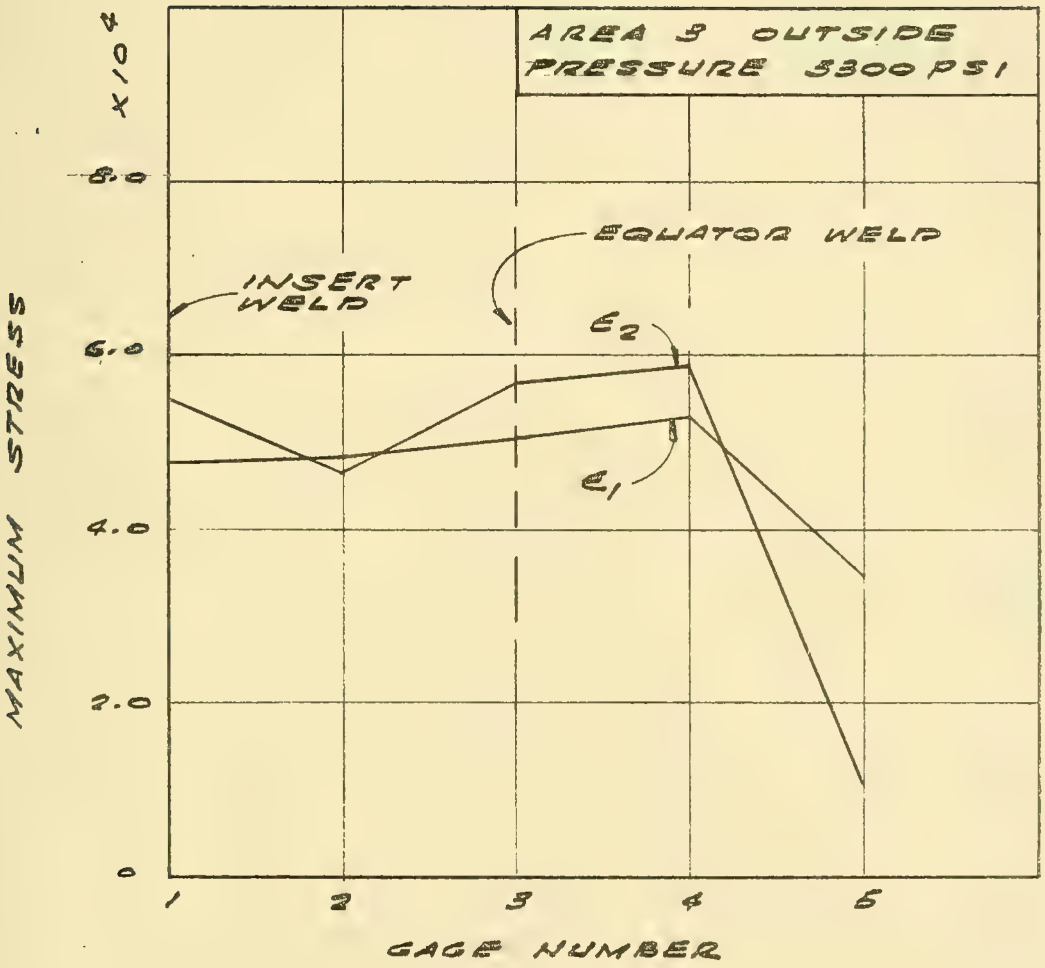

FIGURE 11

Maximum Stress Versus
Gage Location for Area 3 Outside

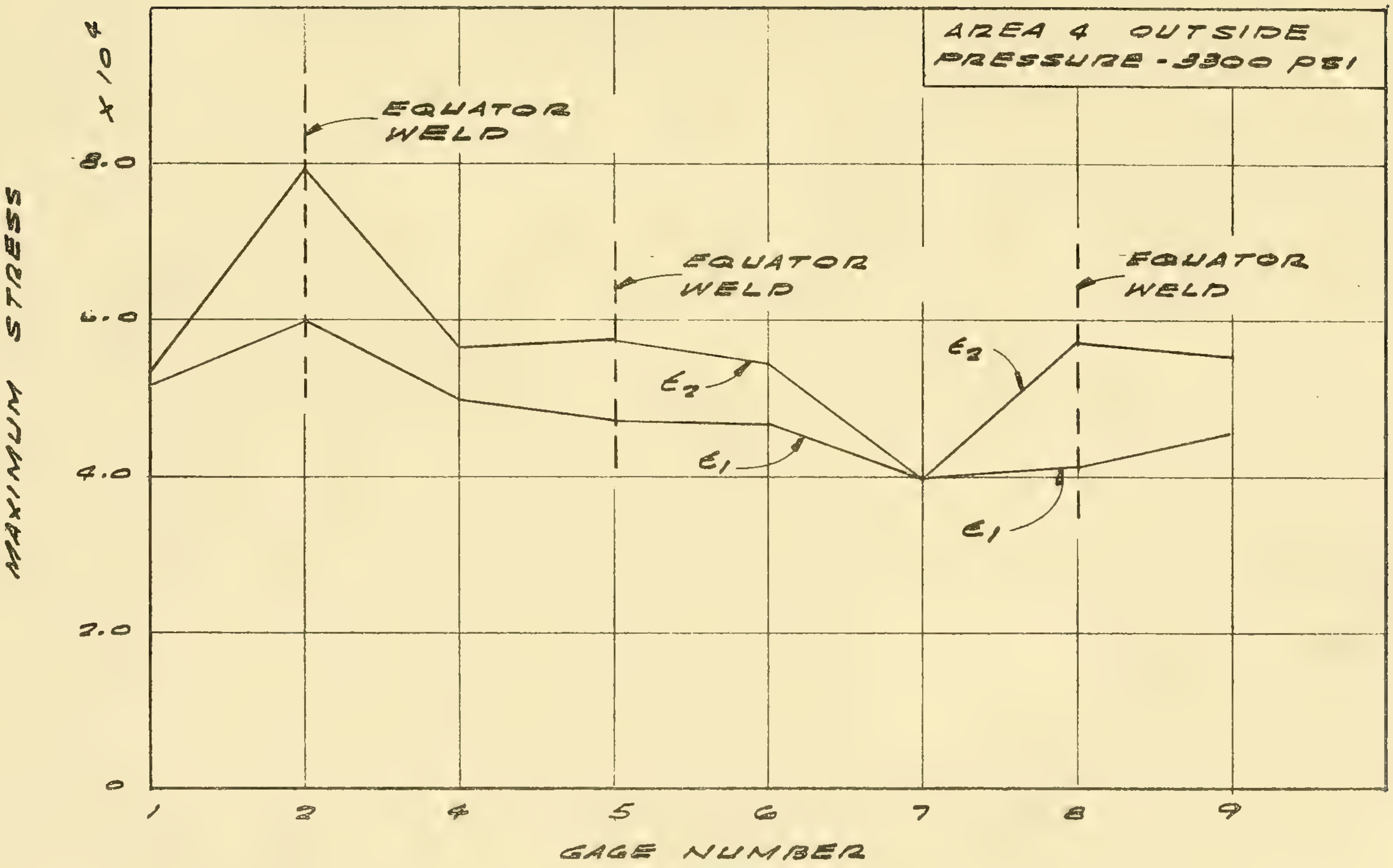

FIGURE 12
Maximum Stress Versus
Gage Location for Area 4 Outside

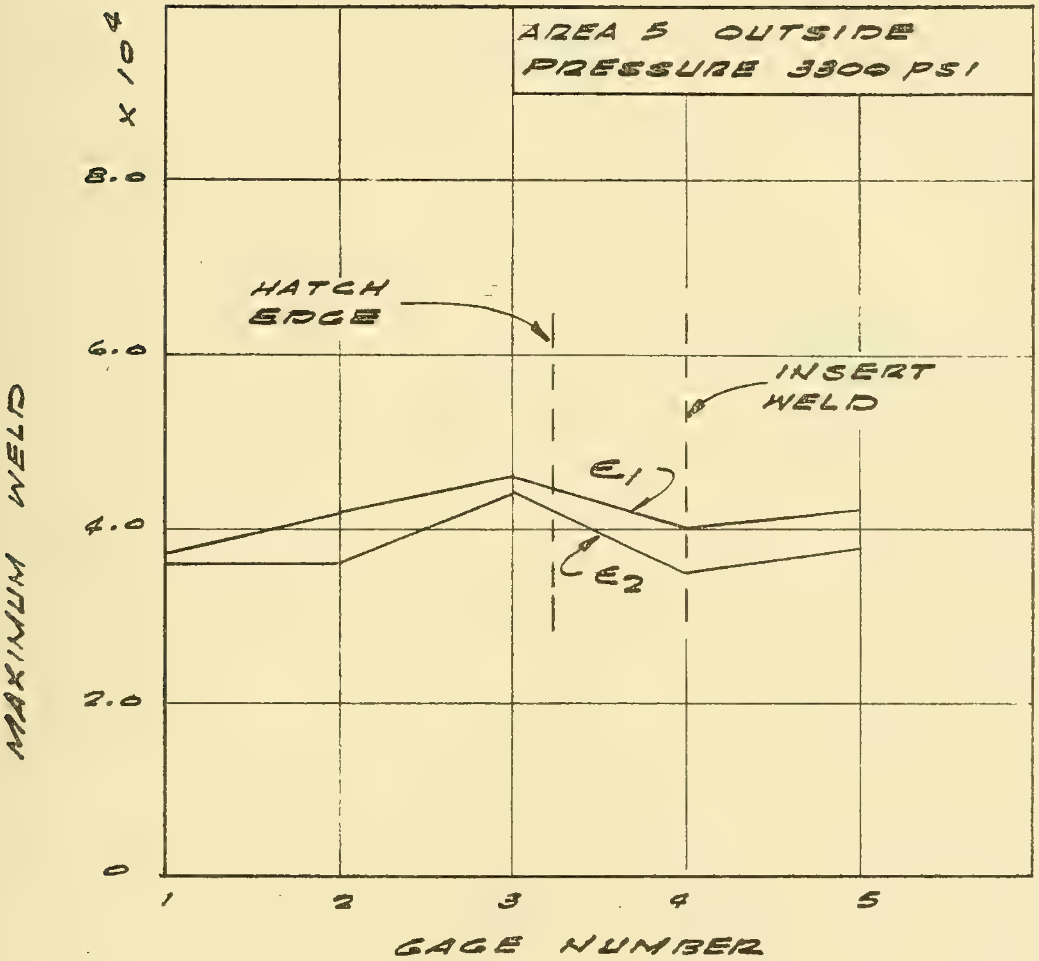

FIGURE 13

Maximum Stress Versus
Gage Location for Area 5 Outside

APPENDIX I

STRAIN GAGE RESULTS

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0            532              0              0              0
       8.0769231+03  9.9230769+03            532            660   2.6923077+02   3.3076923+02
       1.9912088+04  2.0373626+04            532           1320   6.6373626+02   6.7912088+02
       3.0000000+04  3.0000000+04            532           1980   1.0000000+03   1.0000000+03
       4.0978022+04  3.9593406+04            532           2640   1.3659341+03   1.3197802+03
       5.4527472+04  5.1758242+04            532           3300   1.8175824+03   1.7252747+03
```

```
        MIN SCALE      MAX SCALE
               1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0              0
    5        *                                                                                             660   8.0769231+03
    6                      *                                                                            1320   1.9912088+04
    7                                  *                                                                1980   3.0000000+04
    8                                                *                                                  2640   4.0978022+04
    9                                                                 *                                 3300   5.4527472+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0            533              0              0              0
      -3.2967033+01  8.9010989+02            533            660  -1.0989011+00   2.9670330+01
      -2.6373626+02  7.1208791+03            533           1320  -8.7912088+00   2.3736264+02
       1.6483516+03  1.2494505+04            533           1980   5.4945054+01   4.1648351+02
       5.4725275+03  2.0241758+04            533           2640   1.8241758+02   6.7472527+02
       8.1098901+03  2.7032967+04            533           3300   2.7032967+02   9.0109890+02
```

```
        MIN SCALE      MAX SCALE
               1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0              0
       POINT IS LEFT OF SCALE                                                                             660  -3.2967033+01
       POINT IS LEFT OF SCALE                                                                            1320  -2.6373626+02
    3*                                                                                                  1980   1.6483516+03
    4     *                                                                                             2640   5.4725275+03
    5        *                                                                                          3300   8.1098901+03
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0            534              0              0              0
       5.5054945+03  4.3516483+03            534            660   1.8351648+02   1.4505494+02
       1.3318681+04  1.2395604+04            534           1320   4.4395604+02   4.1318681+02
       2.0637363+04  1.8791209+04            534           1980   6.8791209+02   6.2637362+02
       3.0164835+04  2.8549451+04            534           2640   1.0054945+03   9.5164835+02
       3.9725275+04  3.7417582+04            534           3300   1.3241758+03   1.2472527+03
```

```
        MIN SCALE      MAX SCALE
               1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0              0
    7      *                                                                                               660   5.5054945+03
    8               *                                                                                   1320   1.3318681+04
    9                         *                                                                         1980   2.0637363+04
    0                                     *                                                             2640   3.0164835+04
    1                                                 *                                                 3300   3.9725275+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0            535              0              0              0
      4.6813187+03   2.6043956+03            535            660   1.5604396+02   8.6813187+01
      1.3021978+04   1.1406593+04            535           1320   4.3406593+02   3.8021978+02
      2.0538461+04   1.8461538+04            535           1980   6.8461538+02   6.1538461+02
      3.0296703+04   2.7989011+04            535           2640   1.0098901+03   9.3296703+02
      3.8571428+04   3.5571428+04            535           3300   1.2857143+03   1.1857143+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                              0              0
    3    *                                                                                               660   4.6813187+03
    4              *                                                                                    1320   1.3021978+04
    5                       *                                                                           1980   2.0538461+04
    6                                    *                                                              2640   3.0296703+04
    7                                              *                                                    3300   3.8571428+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0            536              0              0              0
     -1.9649883-06   3.0000000+03            536            660  -6.5499609-08   1.0000000+02
      2.4725275+03   1.1241758+04            536           1320   8.2417582+01   3.7472527+02
      5.0439560+03   1.9813187+04            536           1980   1.6813187+02   6.6043956+02
      7.9120879+03   2.9373626+04            536           2640   2.6373626+02   9.7912088+02
      1.1769231+04   3.9230769+04            536           3300   3.9230769+02   1.3076923+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                              0              0
       POINT IS LEFT OF SCALE                                                                            660  -1.9649883-06
    0 *                                                                                                 1320   2.4725275+03
    1    *                                                                                              1980   5.0439560+03
    2        *                                                                                          2640   7.9120879+03
    3            *                                                                                      3300   1.1769231+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0            341              0              0              0
      9.4813186+03   1.1004396+04            341            660   3.1604395+02   3.6681319+02
      1.8962637+04   2.2008791+04            341           1320   6.3208791+02   7.3362637+02
      2.8443956+04   3.3013187+04            341           1980   9.4813186+02   1.1004396+03
      3.7925275+04   4.4017582+04            341           2640   1.2641758+03   1.4672527+03
      4.7406593+04   5.5021978+04            341           3300   1.5802198+03   1.8340659+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                              0              0
    5          *                                                                                         660   9.4813186+03
    6                      *                                                                            1320   1.8962637+04
    7                                 *                                                                 1980   2.8443956+04
    8                                             *                                                     2640   3.7925275+04
    9                                                         *                                         3300   4.7406593+04
```

```
    SIGMA1       SIGMA2       GAGE NO.           PRESSURE      SENS1      SENS2
             0             0           342              0             0              0

  9.6329670+03  9.3098901+03           342            660  3.2109890+02   3.1032967+02

  1.9265934+04  1.8619780+04           342           1320  6.4219780+02   6.2065934+02

  2.8898901+04  2.7929670+04           342           1980  9.6329670+02   9.3098901+02

  3.8531868+04  3.7239560+04           342           2640  1.2843956+03   1.2413187+03

  4.8164835+04  4.6549450+04           342           3300  1.6054945+03   1.5516483+03



    MIN SCALE     MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0               0
1          *                                                                                          660    9.6329670+03
2                      *                                                                             1320    1.9265934+04
3                                  *                                                                 1980    2.8898901+04
4                                              *                                                     2640    3.8531868+04
5                                                          *                                         3300    4.8164835+04
```

```
    SIGMA1       SIGMA2       GAGE NO.           PRESSURE      SENS1      SENS2
             0             0           343              0             0              0

  1.0087912+04  1.1426374+04           343            660  3.3626373+02   3.8087912+02

  2.0175824+04  2.2852747+04           343           1320  6.7252747+02   7.6175824+02

  3.0263736+04  3.4279121+04           343           1980  1.0087912+03   1.1426374+03

  4.0351648+04  4.5705494+04           343           2640  1.3450549+03   1.5235165+03

  5.0439560+04  5.7131868+04           343           3300  1.6813187+03   1.9043956+03



    MIN SCALE     MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0               0
7          *                                                                                          660    1.0087912+04
8                       *                                                                            1320    2.0175824+04
9                                    *                                                               1980    3.0263736+04
0                                                *                                                   2640    4.0351648+04
1                                                             *                                      3300    5.0439560+04
```

```
    SIGMA1       SIGMA2       GAGE NO.           PRESSURE      SENS1      SENS2
             0             0           344              0             0              0

  1.0595604+04  1.1818681+04           344            660  3.5318681+02   3.9395604+02

  2.1191209+04  2.3637363+04           344           1320  7.0637362+02   7.8791209+02

  3.1786813+04  3.5456044+04           344           1980  1.0595604+03   1.1818681+03

  4.2382417+04  4.7274725+04           344           2640  1.4127472+03   1.5758242+03

  5.2978022+04  5.9093406+04           344           3300  1.7659341+03   1.9697802+03



    MIN SCALE     MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0               0
3           *                                                                                         660    1.0595604+04
4                        *                                                                           1320    2.1191209+04
5                                      *                                                             1980    3.1786813+04
6                                                   *                                                2640    4.2382417+04
7                                                                *                                   3300    5.2978022+04
```

```
        SIGMA1         SIGMA2        GAGE NO.              PRESSURE         SENS1         SENS2
                 0              0              345                0             0              0

     6.9230769+03   2.0769231+03               345              660  2.3076923+02   6.9230769+01

     1.3846154+04   4.1538461+03               345             1320  4.6153846+02   1.3846154+02

     2.0769231+04   6.2307692+03               345             1980  6.9230769+02   2.0769231+02

     2.7692308+04   8.3076923+03               345             2640  9.2307692+02   2.7692307+02

     3.4615385+04   1.0384615+04               345             3300  1.1538461+03   3.4615384+02



        MIN SCALE      MAX SCALE
              1000          72000
 ---------8---------16--------24--------32--------40--------48--------56--------64------- 72       PRES.          STRESS
    POINT IS LEFT OF SCALE                                                                                 0               0
 9      *                                                                                                660    6.9230769+03
 0               *                                                                                      1320    1.3846154+04
 1                        *                                                                             1980    2.0769231+04
 2                                *                                                                     2640    2.7692308+04
 3                                         *                                                            3300    3.4615385+04
```

```
        SIGMA1         SIGMA2        GAGE NO.              PRESSURE         SENS1         SENS2
                 0              0              441                0             0              0

     1.0338461+04   1.0661538+04               441              660  3.4461538+02   3.5538461+02

     2.0676923+04   2.1323077+04               441             1320  6.8923076+02   7.1076923+02

     3.1015385+04   3.1984615+04               441             1980  1.0338461+03   1.0661538+03

     4.1353846+04   4.2646154+04               441             2640  1.3784615+03   1.4215385+03

     5.1692308+04   5.3307692+04               441             3300  1.7230769+03   1.7769231+03



        MIN SCALE      MAX SCALE
              1000          72000
 ---------8---------16--------24--------32--------40--------48--------56--------64------- 72       PRES.          STRESS
    POINT IS LEFT OF SCALE                                                                                 0               0
 5           *                                                                                           660    1.0338461+04
 6                        *                                                                             1320    2.0676923+04
 7                                     *                                                                1980    3.1015385+04
 8                                                  *                                                   2640    4.1353846+04
 9                                                               *                                      3300    5.1692308+04
```

```
        SIGMA1         SIGMA2        GAGE NO.              PRESSURE         SENS1         SENS2
                 0              0              442                0             0              0

     1.2013187+04   1.5843956+04               442              660  4.0043956+02   5.2813187+02

     2.4026374+04   3.1687912+04               442             1320  8.0087912+02   1.0562637+03

     3.6039560+04   4.7531868+04               442             1980  1.2013187+03   1.5843956+03

     4.8052747+04   6.3375824+04               442             2640  1.6017582+03   2.1125275+03

     6.0065934+04   7.9219780+04               442             3300  2.0021978+03   2.6406593+03



        MIN SCALE      MAX SCALE
              1000          72000
 ---------8---------16--------24--------32--------40--------48--------56--------64------- 72       PRES.          STRESS
    POINT IS LEFT OF SCALE                                                                                 0               0
 1             *                                                                                         660    1.2013187+04
 2                            *                                                                         1320    2.4026374+04
 3                                           *                                                          1980    3.6039560+04
 4                                                          *                                           2640    4.8052747+04
 5                                                                         *                            3300    6.0065934+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            444              0              0              0

  1.0002198+04   1.1340659+04            444            660   3.3340659+02   3.7802198+02

  2.0004396+04   2.2681319+04            444           1320   6.6681318+02   7.5604395+02

  3.0006593+04   3.4021978+04            444           1980   1.0002198+03   1.1340659+03

  4.0008791+04   4.5362637+04            444           2640   1.3336264+03   1.5120879+03

  5.0010989+04   5.6703297+04            444           3300   1.6670330+03   1.8901099+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                              0              0
7          *                                                                                         660   1.0002198+04
8                       *                                                                           1320   2.0004396+04
9                                   *                                                               1980   3.0006593+04
0                                                *                                                  2640   4.0008791+04
1                                                            *                                      3300   5.0010989+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            445              0              0              0

  9.4417582+03   1.1472527+04            445            660   3.1472527+02   3.8241758+02

  1.8883516+04   2.2945055+04            445           1320   6.2945055+02   7.6483516+02

  2.8325275+04   3.4417582+04            445           1980   9.4417582+02   1.1472527+03

  3.7767033+04   4.5890110+04            445           2640   1.2589011+03   1.5296703+03

  4.7208791+04   5.7362637+04            445           3300   1.5736264+03   1.9120879+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                              0              0
3          *                                                                                         660   9.4417582+03
4                     *                                                                             1320   1.8883516+04
5                                 *                                                                 1980   2.8325275+04
6                                             *                                                     2640   3.7767033+04
7                                                         *                                         3300   4.7208791+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            446              0              0              0

  9.3758241+03   1.0852747+04            446            660   3.1252747+02   3.6175824+02

  1.8751648+04   2.1705494+04            446           1320   6.2505494+02   7.2351648+02

  2.8127472+04   3.2558242+04            446           1980   9.3758241+02   1.0852747+03

  3.7503297+04   4.3410989+04            446           2640   1.2501099+03   1.4470330+03

  4.6879121+04   5.4263736+04            446           3300   1.5626374+03   1.8087912+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                              0              0
9         *                                                                                          660   9.3758241+03
0                     *                                                                             1320   1.8751648+04
1                                 *                                                                 1980   2.8127472+04
2                                             *                                                     2640   3.7503297+04
3                                                         *                                         3300   4.6879121+04
```

```
      SIGMA1         SIGMA2    GAGE NO.             PRESSURE       SENS1         SENS2
               0              0            447             0              0               0

    7.9714285+03   7.9714285+03            447           660   2.6571428+02    2.6571428+02

    1.5942857+04   1.5942857+04            447          1320   5.3142857+02    5.3142857+02

    2.3914286+04   2.3914286+04            447          1980   7.9714285+02    7.9714285+02

    3.1885714+04   3.1885714+04            447          2640   1.0628571+03    1.0628571+03

    3.9857143+04   3.9857143+04            447          3300   1.3285714+03    1.3285714+03
```

```
    MIN SCALE      MAX SCALE
            1000           72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72         PRES.      STRESS
   POINT IS LEFT OF SCALE                                                                              0               0
5        *                                                                                           660    7.9714285+03
6                  *                                                                                1320    1.5942857+04
7                            *                                                                      1980    2.3914286+04
8                                      *                                                            2640    3.1885714+04
9                                                *                                                  3300    3.9857143+04
```

```
      SIGMA1         SIGMA2    GAGE NO.             PRESSURE       SENS1         SENS2
               0              0            448             0              0               0

    8.2219780+03   1.1406593+04            448           660   2.7406593+02    3.8021978+02

    1.6443956+04   2.2813187+04            448          1320   5.4813187+02    7.6043956+02

    2.4665934+04   3.4219780+04            448          1980   8.2219780+02    1.1406593+03

    3.2887912+04   4.5626374+04            448          2640   1.0962637+03    1.5208791+03

    4.1109890+04   5.7032967+04            448          3300   1.3703297+03    1.9010989+03
```

```
    MIN SCALE      MAX SCALE
            1000           72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72         PRES.      STRESS
   POINT IS LEFT OF SCALE                                                                              0               0
1        *                                                                                           660    8.2219780+03
2                  *                                                                                1320    1.6443956+04
3                             *                                                                     1980    2.4665934+04
4                                       *                                                           2640    3.2887912+04
5                                                 *                                                 3300    4.1109890+04
```

```
      SIGMA1         SIGMA2    GAGE NO.             PRESSURE       SENS1         SENS2
               0              0            449             0              0               0

    9.0989011+03   1.1129670+04            449           660   3.0329670+02    3.7098901+02

    5.7204396+05   1.8684132+06            449          1320   1.9068132+04    6.2280439+04

    2.7296703+04   3.3389011+04            449          1980   9.0989011+02    1.1129670+03

    3.6395604+04   4.4518681+04            449          2640   1.2131868+03    1.4839560+03

    4.5494505+04   5.5648352+04            449          3300   1.5164835+03    1.8549450+03
```

```
    MIN SCALE      MAX SCALE
            1000           72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72         PRES.      STRESS
   POINT IS LEFT OF SCALE                                                                              0               0
7         *                                                                                          660    9.0989011+03
   POINT IS RIGHT OF SCALE                                                                          1320    5.7204396+05
9                                *                                                                  1980    2.7296703+04
0                                           *                                                       2640    3.6395604+04
1                                                       *                                           3300    4.5494505+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            541              0              0              0

  7.4439560+03   7.2131868+03            541            660   2.4813187+02   2.4043956+02

  1.4887912+04   1.4426374+04            541           1320   4.9626373+02   4.8087912+02

  2.2331868+04   2.1639560+04            541           1980   7.4439560+02   7.2131868+02

  2.9775824+04   2.8852747+04            541           2640   9.9252747+02   9.6175824+02

  3.7219780+04   3.6065934+04            541           3300   1.2406593+03   1.2021978+03



    MIN SCALE      MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                              0              0
3       *                                                                                             660   7.4439560+03
4                *                                                                                   1320   1.4887912+04
5                          *                                                                         1980   2.2331868+04
6                                   *                                                                2640   2.9775824+04
7                                            *                                                       3300   3.7219780+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            542              0              0              0

  8.4395604+03   7.3318681+03            542            660   2.8131868+02   2.4439560+02

  1.6879121+04   1.4663736+04            542           1320   5.6263736+02   4.8879121+02

  2.5318681+04   2.1995604+04            542           1980   8.4395604+02   7.3318681+02

  3.3758242+04   2.9327472+04            542           2640   1.1252747+03   9.7758241+02

  4.2197802+04   3.6659341+04            542           3300   1.4065934+03   1.2219780+03



    MIN SCALE      MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                              0              0
9        *                                                                                            660   8.4395604+03
0                   *                                                                                1320   1.6879121+04
1                             *                                                                      1980   2.5318681+04
2                                        *                                                           2640   3.3758242+04
3                                                   *                                                3300   4.2197802+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            543              0              0              0

  1.1307692+04   1.0892308+04            543            660   3.7692308+02   3.6307692+02

  2.2615385+04   2.1784615+04            543           1320   7.5384615+02   7.2615384+02

  3.3923077+04   3.2676923+04            543           1980   1.1307692+03   1.0892308+03

  4.5230769+04   4.3569231+04            543           2640   1.5076923+03   1.4523077+03

  5.6538461+04   5.4461538+04            543           3300   1.8846154+03   1.8153846+03



    MIN SCALE      MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                              0              0
5            *                                                                                        660   1.1307692+04
6                          *                                                                         1320   2.2615385+04
7                                        *                                                           1980   3.3923077+04
8                                                      *                                             2640   4.5230769+04
9                                                                     *                              3300   5.6538461+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            236               0             0              0

  8.5714286+03   8.5714286+03            236             660  2.8571428+02   2.8571428+02

  1.8791209+04   1.7637363+04            236            1320  6.2637362+02   5.8791209+02

  2.7032967+04   2.6109890+04            236            1980  9.0109890+02   8.7032967+02

  3.6065934+04   3.4219780+04            236            2640  1.2021978+03   1.1406593+03

  4.6516483+04   4.4554945+04            236            3300  1.5505494+03   1.4851648+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0              0
3        *                                                                                            660   8.5714286+03
4                     *                                                                              1320   1.8791209+04
5                                *                                                                   1980   2.7032967+04
6                                           *                                                        2640   3.6065934+04
7                                                        *                                           3300   4.6516483+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            237               0             0              0

  1.1142857+04   1.1142857+04            237             660  3.7142857+02   3.7142857+02

  2.3274725+04   2.2582418+04            237            1320  7.7582417+02   7.5274725+02

  3.2802198+04   2.9340659+04            237            1980  1.0934066+03   9.7802198+02

  4.5032967+04   4.1109890+04            237            2640  1.5010989+03   1.3703297+03

  5.8912088+04   5.6373626+04            237            3300  1.9637363+03   1.8791209+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0              0
9            *                                                                                        660   1.1142857+04
0                           *                                                                        1320   2.3274725+04
1                                       *                                                            1980   3.2802198+04
2                                                      *                                             2640   4.5032967+04
3                                                                        *                           3300   5.8912088+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            238               0             0              0

  9.8571428+03   9.8571428+03            238             660  3.2857143+02   3.2857143+02

  2.5945055+04   2.2483516+04            238            1320  8.6483516+02   7.4945055+02

  3.8538461+04   3.3461538+04            238            1980  1.2846154+03   1.1153846+03

  5.6538461+04   4.5461538+04            238            2640  1.8846154+03   1.5153846+03

  6.3626374+04   5.5087912+04            238            3300  2.1208791+03   1.8362637+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0              0
5          *                                                                                          660   9.8571428+03
6                              *                                                                     1320   2.5945055+04
7                                              *                                                     1980   3.8538461+04
8                                                                     *                              2640   5.6538461+04
9                                                                              *                     3300   6.3626374+04
```

```
    SIGMA1        SIGMA2       GAGE NO.             PRESSURE       SENS1      SENS2
             0              0            233               0              0              0
  9.9890110+03   9.2967033+03            233             660   3.3296703+02   3.0989011+02
  2.3241758+04   2.0472527+04            233            1320   7.7472527+02   6.8241758+02
  3.3692308+04   2.9307692+04            233            1980   1.1230769+03   9.7692307+02
  4.5098901+04   3.9329670+04            233            2640   1.5032967+03   1.3109890+03
  5.6703297+04   5.0010989+04            233            3300   1.8901099+03   1.6670330+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                0              0
5          *                                                                                          660   9.9890110+03
6                            *                                                                        1320   2.3241758+04
7                                         *                                                           1980   3.3692308+04
8                                                       *                                             2640   4.5098901+04
9                                                                      *                              3300   5.6703297+04
```

```
    SIGMA1        SIGMA2       GAGE NO.             PRESSURE       SENS1      SENS2
             0              0            234               0              0              0
  1.0747253+04   9.8241758+03            234             660   3.5824176+02   3.2747253+02
  2.2351648+04   2.0505494+04            234            1320   7.4505494+02   6.8351648+02
  3.2670330+04   2.9901099+04            234            1980   1.0890110+03   9.9670329+02
  4.4274725+04   4.0582417+04            234            2640   1.4758242+03   1.3527472+03
  5.5747253+04   5.1824176+04            234            3300   1.8582418+03   1.7274725+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                0              0
1           *                                                                                         660   1.0747253+04
2                           *                                                                         1320   2.2351648+04
3                                        *                                                            1980   3.2670330+04
4                                                      *                                              2640   4.4274725+04
5                                                                     *                               3300   5.5747253+04
```

```
    SIGMA1        SIGMA2       GAGE NO.             PRESSURE       SENS1      SENS2
             0              0            235               0              0              0
  1.0549451+04   9.1648351+03            235             660   3.5164835+02   3.0549450+02
  2.2945055+04   1.9483516+04            235            1320   7.6483516+02   6.4945055+02
  3.3065934+04   2.8219780+04            235            1980   1.1021978+03   9.4065934+02
  4.5412088+04   3.8373626+04            235            2640   1.5137363+03   1.2791209+03
  5.7494505+04   4.9648352+04            235            3300   1.9164835+03   1.6549450+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                0              0
7           *                                                                                         660   1.0549451+04
8                           *                                                                         1320   2.2945055+04
9                                        *                                                            1980   3.3065934+04
0                                                        *                                            2640   4.5412088+04
1                                                                       *                             3300   5.7494505+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0           2315              0               0              0

      1.4505494+03   6.4351648+03           2315            600    4.8351648+01   2.1450549+02

      2.9010989+03   1.2870330+04           2315           1200    9.6703296+01   4.2901099+02

      4.3516483+03   1.9305494+04           2315           1800    1.4505494+02   6.4351648+02

      5.8021978+03   2.5740659+04           2315           2400    1.9340659+02   8.5802197+02

      7.2527472+03   3.2175824+04           2315           3000    2.4175824+02   1.0725275+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0              0
    7*                                                                                                    600   1.4505494+03
    8 *                                                                                                  1200   2.9010989+03
    9   *                                                                                                1800   4.3516483+03
    0     *                                                                                              2400   5.8021978+03
    1       *                                                                                            3000   7.2527472+03
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0           231               0               0              0

      8.5714286+03   8.5714286+03           231             660    2.8571428+02   2.8571428+02

      1.8000000+04   1.8000000+04           231            1320    6.0000000+02   6.0000000+02

      2.5813187+04   2.6043956+04           231            1980    8.6043956+02   8.6813187+02

      3.4483516+04   3.4945055+04           231            2640    1.1494505+03   1.1648352+03

      4.3483516+04   4.3945055+04           231            3300    1.4494505+03   1.4648352+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0              0
    3       *                                                                                             660   8.5714286+03
    4                   *                                                                                1320   1.8000000+04
    5                              *                                                                     1980   2.5813187+04
    6                                         *                                                          2640   3.4483516+04
    7                                                    *                                               3300   4.3483516+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0           232               0               0              0

      1.1142857+04   1.1142857+04           232             660    3.7142857+02   3.7142857+02

      2.4000000+04   2.2500000+04           232            1320    8.0000000+02   7.5000000+02

      3.3362637+04   2.9208791+04           232            1980    1.1120879+03   9.7362637+02

      4.5230769+04   3.8769231+04           232            2640    1.5076923+03   1.2923077+03

      6.1384615+04   6.4615385+04           232            3300    2.0461538+03   2.1538461+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56--------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0              0
    9            *                                                                                        660   1.1142857+04
    0                            *                                                                       1320   2.4000000+04
    1                                        *                                                           1980   3.3362637+04
    2                                                     *                                              2640   4.5230769+04
    3                                                                          *                         3300   6.1384615+04
```

```
    SIGMA1         SIGMA2       GAGE NO.            PRESSURE        SENS1      SENS2
             0               0            239               0              0              0
  1.0467033+04    9.8901099+03            239             660   3.4890110+02   3.2967033+02
  2.2549451+04    2.1164835+04            239            1320   7.5164835+02   7.0549450+02
  3.2967033+04    3.0890110+04            239            1980   1.0989011+03   1.0296703+03
  4.4472527+04    4.1241758+04            239            2640   1.4824176+03   1.3747253+03
  5.7032967+04    5.3109890+04            239            3300   1.9010989+03   1.7703297+03



    MIN SCALE      MAX SCALE
           1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72           PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                  0              0
1            *                                                                                           660   1.0467033+04
2                           *                                                                           1320   2.2549451+04
3                                        *                                                              1980   3.2967033+04
4                                                       *                                               2640   4.4472527+04
5                                                                       *                               3300   5.7032967+04



    SIGMA1         SIGMA2       GAGE NO.            PRESSURE        SENS1      SENS2
             0               0            431               0              0              0
  1.0945055+04    1.0483516+04            431             660   3.6483516+02   3.4945055+02
  2.2846154+04    2.2153846+04            431            1320   7.6153846+02   7.3846154+02
  3.3890110+04    3.2967033+04            431            1980   1.1296703+03   1.0989011+03
  4.3945055+04    4.3483516+04            431            2640   1.4648352+03   1.4494505+03
  5.5054945+04    5.5516483+04            431            3300   1.8351648+03   1.8505494+03



    MIN SCALE      MAX SCALE
           1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72           PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                  0              0
7            *                                                                                           660   1.0945055+04
8                           *                                                                           1320   2.2846154+04
9                                          *                                                            1980   3.3890110+04
0                                                       *                                               2640   4.3945055+04
1                                                                      *                                3300   5.5054945+04



    SIGMA1         SIGMA2       GAGE NO.            PRESSURE        SENS1      SENS2
             0               0            432               0              0              0
  1.0137363+04    9.7912088+03            432             660   3.3791209+02   3.2637363+02
  2.1890110+04    2.0967033+04            432            1320   7.2967033+02   6.9890110+02
  3.1780220+04    2.9934066+04            432            1980   1.0593407+03   9.9780219+02
  4.3681319+04    4.1604396+04            432            2640   1.4560440+03   1.3868132+03
  5.5054945+04    5.2516483+04            432            3300   1.8351648+03   1.7505494+03



    MIN SCALE      MAX SCALE
           1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72           PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                  0              0
3           *                                                                                            660   1.0137363+04
4                          *                                                                            1320   2.1890110+04
5                                        *                                                              1980   3.1780220+04
6                                                       *                                               2640   4.3681319+04
7                                                                      *                                3300   5.5054945+04
```

```
    SIGMA1       SIGMA2       GAGE NO.            PRESSURE       SENS1     SENS2
             0             0            433              0              0             0

  1.0285714+04  1.0285714+04            433            660   3.4285714+02  3.4285714+02

  2.2186813+04  2.1956044+04            433           1320   7.3956044+02  7.3186813+02

  3.1714286+04  3.1714286+04            433           1980   1.0571429+03  1.0571429+03

  4.3780220+04  4.3434066+04            433           2640   1.4593407+03  1.4478022+03

  5.6373626+04  5.5912088+04            433           3300   1.8791209+03  1.8637363+03
```

```
    MIN SCALE     MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                            0              0
9           *                                                                                      660   1.0285714+04
0                          *                                                                      1320   2.2186813+04
1                                      *                                                          1980   3.1714286+04
2                                                    *                                            2640   4.3780220+04
3                                                                   *                             3300   5.6373626+04
```

```
    SIGMA1       SIGMA2       GAGE NO.            PRESSURE       SENS1     SENS2
             0             0            436              0              0             0

  1.0285714+04  1.0285714+04            436            660   3.4285714+02  3.4285714+02

  2.1956044+04  2.2186813+04            436           1320   7.3186813+02  7.3956044+02

  3.1714286+04  3.1714286+04            436           1980   1.0571429+03  1.0571429+03

  4.4175824+04  4.3252747+04            436           2640   1.4725275+03  1.4417582+03

  5.5417582+04  5.4725275+04            436           3300   1.8472527+03  1.8241758+03
```

```
    MIN SCALE     MAX SCALE
          1000          72000
---------8---------16--------24--------32-------- 10--------48--------56-------64------- 72      PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                            0              0
5           *                                                                                      660   1.0285714+04
6                         *                                                                       1320   2.1956044+04
7                                      *                                                          1980   3.1714286+04
8                                                    *                                            2640   4.4175824+04
9                                                                  *                              3300   5.5417582+04
```

```
    SIGMA1       SIGMA2       GAGE NO.            PRESSURE       SENS1     SENS2
             0             0            437              0              0             0

  1.0615385+04  1.0384615+04            437            660   3.5384615+02  3.4615384+02

  2.2516483+04  2.2054945+04            437           1320   7.5054945+02  7.3516483+02

  3.2142857+04  3.2142857+04            437           1980   1.0714286+03  1.0714286+03

  4.3846154+04  4.3153846+04            437           2640   1.4615385+03  1.4384615+03

  5.5945055+04  5.5483516+04            437           3300   1.8648352+03  1.8494505+03
```

```
    MIN SCALE     MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                            0              0
1           *                                                                                      660   1.0615385+04
2                          *                                                                      1320   2.2516483+04
3                                      *                                                          1980   3.2142857+04
4                                                     *                                           2640   4.3846154+04
5                                                                   *                             3300   5.5945055+04
```

```
        SIGMA1       SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0             0            438              0             0              0
      1.0467033+04  9.8901099+03            438            660  3.4890110+02   3.2967033+02
      2.1840659+04  2.0802198+04            438           1320  7.2802198+02   6.9340659+02
      3.1648352+04  3.0494505+04            438           1980  1.0549450+03   1.0164835+03
      4.3252747+04  4.1175824+04            438           2640  1.4417582+03   1.3725275+03
      5.4824176+04  5.2747253+04            438           3300  1.8274725+03   1.7582418+03


    MIN SCALE     MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72     PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                            0             0
7           *                                                                                      660  1.0467033+04
8                        *                                                                        1320  2.1840659+04
9                                    *                                                            1980  3.1648352+04
0                                                   *                                             2640  4.3252747+04
1                                                                *                                3300  5.4824176+04
```

```
        SIGMA1       SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0             0            439              0             0              0
      1.0285714+04  1.0285714+04            439            660  3.4285714+02   3.4285714+02
      2.1527472+04  2.1758242+04            439           1320  7.1758241+02   7.2527472+02
      3.1714286+04  3.1714286+04            439           1980  1.0571429+03   1.0571429+03
      4.3945055+04  4.3483516+04            439           2640  1.4648352+03   1.4494505+03
      5.4857143+04  5.4857143+04            439           3300  1.8285714+03   1.8285714+03


    MIN SCALE     MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72     PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                            0             0
3           *                                                                                      660  1.0285714+04
4                         *                                                                       1320  2.1527472+04
5                                     *                                                           1980  3.1714286+04
6                                                    *                                            2640  4.3945055+04
7                                                                  *                              3300  5.4857143+04
```

```
        SIGMA1       SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0             0            531              0             0              0
      9.7912088+03  1.0137363+04            531            660  3.2637363+02   3.3791209+02
      2.1230769+04  2.0769231+04            531           1320  7.0769230+02   6.9230769+02
      3.1318681+04  3.0395604+04            531           1980  1.0439560+03   1.0131868+03
      4.3681319+04  4.1604396+04            531           2640  1.4560440+03   1.3868132+03
      5.3637363+04  5.1791209+04            531           3300  1.7879121+03   1.7263736+03


    MIN SCALE     MAX SCALE
          1000         72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72     PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                            0             0
9          *                                                                                       660  9.7912088+03
0                        *                                                                        1320  2.1230769+04
1                                    *                                                            1980  3.1318681+04
2                                                    *                                            2640  4.3681319+04
3                                                                *                                3300  5.3637363+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            544              0              0              0

  1.0087912+04   9.0263736+03            544            660   3.3626373+02   3.0087912+02

  2.0175824+04   1.8052747+04            544           1320   6.7252747+02   6.0175824+02

  3.0263736+04   2.7079121+04            544           1980   1.0087912+03   9.0263736+02

  -.0351648+04   3.6105494+04            544           2640   1.3450549+03   1.2035165+03

  5.0439560+04   4.5131868+04            544           3300   1.6813187+03   1.5043956+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                              0              0
1          *                                                                                         660   1.0087912+04
2                       *                                                                           1320   2.0175824+04
3                                    *                                                              1980   3.0263736+04
4                                                *                                                  2640   4.0351648+04
5                                                             *                                     3300   5.0439560+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            545              0              0              0

  1.0542857+04   9.6428571+03            545            660   3.5142857+02   3.2142857+02

  2.1085714+04   1.9285714+04            545           1320   7.0285714+02   6.4285714+02

  3.1628571+04   2.8928571+04            545           1980   1.0542857+03   9.6428571+02

  4.2171428+04   3.8571428+04            545           2640   1.4057143+03   1.2857143+03

  5.2714286+04   4.8214286+04            545           3300   1.7571429+03   1.6071429+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                              0              0
7           *                                                                                        660   1.0542857+04
8                        *                                                                          1320   2.1085714+04
9                                     *                                                             1980   3.1628571+04
0                                                   *                                               2640   4.2171428+04
1                                                                *                                  3300   5.2714286+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            131              0              0              0

  1.0120879+04   1.1736264+04            131            660   3.3736264+02   3.9120879+02

  2.0241758+04   2.3472527+04            131           1320   6.7472527+02   7.8241758+02

  3.0362637+04   3.5208791+04            131           1980   1.0120879+03   1.1736264+03

  4.0483516+04   4.6945055+04            131           2640   1.3494505+03   1.5648352+03

  5.0604396+04   5.8681319+04            131           3300   1.6868132+03   1.9560440+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                              0              0
3          *                                                                                         660   1.0120879+04
4                       *                                                                           1320   2.0241758+04
5                                    *                                                              1980   3.0362637+04
6                                                *                                                  2640   4.0483516+04
7                                                             *                                     3300   5.0604396+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            134              0              0              0

  1.0496703+04   1.0589011+04            134            660   3.4989011+02   3.5296703+02

  2.0993406+04   2.1178022+04            134           1320   6.9978022+02   7.0593406+02

  3.1490110+04   3.1767033+04            134           1980   1.0496703+03   1.0589011+03

  4.1986813+04   4.2356044+04            134           2640   1.3995604+03   1.4118681+03

  5.2483516+04   5.2945055+04            134           3300   1.7494505+03   1.7648352+03
```

```
    MIN SCALE      MAX SCALE
           1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0             0
9           *                                                                                         660  1.0496703+04
0                        *                                                                           1320  2.0993406+04
1                                     *                                                              1980  3.1490110+04
2                                                  *                                                 2640  4.1986813+04
3                                                                *                                   3300  5.2483516+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            135              0              0              0

  9.9032967+03   9.2109890+03            135            660   3.3010989+02   3.0703297+02

  1.9806593+04   1.8421978+04            135           1320   6.6021978+02   6.1406593+02

  2.9709890+04   2.7632967+04            135           1980   9.9032967+02   9.2109890+02

  3.9613187+04   3.6843956+04            135           2640   1.3204396+03   1.2281319+03

  4.9516483+04   4.6054945+04            135           3300   1.6505494+03   1.5351648+03
```

```
    MIN SCALE      MAX SCALE
           1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0             0
5          *                                                                                          660  9.9032967+03
6                       *                                                                            1320  1.9806593+04
7                                   *                                                                1980  2.9709890+04
8                                               *                                                    2640  3.9613187+04
9                                                            *                                       3300  4.9516483+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
             0              0            136              0              0              0

  1.3846154+03   4.6153846+03            136            660   4.6153846+01   1.5384615+02

  2.7692308+03   9.2307692+03            136           1320   9.2307692+01   3.0769231+02

  4.1538461+03   1.3846154+04            136           1980   1.3846154+02   4.6153846+02

  5.5384615+03   1.8461538+04            136           2640   1.8461538+02   6.1538461+02

  6.9230769+03   2.3076923+04            136           3300   2.3076923+02   7.6923077+02
```

```
    MIN SCALE      MAX SCALE
           1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                               0             0
 *                                                                                                    660  1.3846154+03
2 *                                                                                                  1320  2.7692308+03
3   *                                                                                                1980  4.1538461+03
4     *                                                                                              2640  5.5384615+03
5      *                                                                                             3300  6.9230769+03
```

```
          SIGMA1         SIGMA2      GAGE NO.                 PRESSURE        SENS1       SENS2
                   0              0               137                0             0              0

        3.1252747+03   8.0175824+03               137              660    1.0417582+02   2.6725275+02

        6.2505494+03   1.6035165+04               137             1320    2.0835165+02   5.3450549+02

        9.3758241+03   2.4052747+04               137             1980    3.1252747+02   8.0175824+02

        1.2501099+04   3.2070330+04               137             2640    4.1670330+02   1.0690110+03

        1.5626374+04   4.0087912+04               137             3300    5.2087912+02   1.3362637+03
```

```
          MIN SCALE      MAX SCALE
                1000          72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.          STRESS
        POINT IS LEFT OF SCALE                                                                              0               0
     7  *                                                                                                 660    3.1252747+03
     8      *                                                                                            1320    6.2505494+03
     9         *                                                                                         1980    9.3758241+03
     0             *                                                                                     2640    1.2501099+04
     1                 *                                                                                 3300    1.5626374+04
```

```
          SIGMA1         SIGMA2      GAGE NO.                 PRESSURE        SENS1       SENS2
                   0              0               135                0             0              0

        9.9032967+03   9.2109890+03               135              660    3.3010989+02   3.0703297+02

        1.9806593+04   1.8421978+04               135             1320    6.6021978+02   6.1406593+02

        2.9709890+04   2.7632967+04               135             1980    9.9032967+02   9.2109890+02

        3.9613187+04   3.6843956+04               135             2640    1.3204396+03   1.2281319+03

        4.9516483+04   4.6054945+04               135             3300    1.6505494+03   1.5351648+03
```

```
          MIN SCALE      MAX SCALE
                1000          72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.          STRESS
        POINT IS LEFT OF SCALE                                                                              0               0
     3           *                                                                                        660    9.9032967+03
     4                        *                                                                          1320    1.9806593+04
     5                                    *                                                              1980    2.9709890+04
     6                                                *                                                  2640    3.9613187+04
     7                                                             *                                     3300    4.9516483+04
```

```
          SIGMA1         SIGMA2      GAGE NO.                 PRESSURE        SENS1       SENS2
                   0              0               136                0             0              0

        1.3846154+03   4.6153846+03               136              660    4.6153846+01   1.5384615+02

        2.7692308+03   9.2307692+03               136             1320    9.2307692+01   3.0769231+02

        4.1538461+03   1.3846154+04               136             1980    1.3846154+02   4.6153846+02

        5.5384615+03   1.8461538+04               136             2640    1.8461538+02   6.1538461+02

        6.9230769+03   2.3076923+04               136             3300    2.3076923+02   7.6923077+02
```

```
          MIN SCALE      MAX SCALE
                1000          72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.          STRESS
        POINT IS LEFT OF SCALE                                                                              0               0
     *                                                                                                    660    1.3846154+03
     0 *                                                                                                 1320    2.7692308+03
     1   *                                                                                               1980    4.1538461+03
     2     *                                                                                             2640    5.5384615+03
     3      *                                                                                            3300    6.9230769+03
```

```
         SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                  0              0            137              0              0              0

       3.1252747+03   8.0175824+03            137            660   1.0417582+02   2.6725275+02

       6.2505494+03   1.6035165+04            137           1320   2.0835165+02   5.3450549+02

       9.3758241+03   2.4052747+04            137           1980   3.1252747+02   8.0175824+02

       1.2501099+04   3.2070330+04            137           2640   4.1670330+02   1.0690110+03

       1.5626374+04   4.0087912+04            137           3300   5.2087912+02   1.3362637+03



         MIN SCALE      MAX SCALE
               1000          72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
        POINT IS LEFT OF SCALE                                                              0               0
     5  *                                                                                                 660    3.1252747+03
     6      *                                                                                            1320    6.2505494+03
     7         *                                                                                         1980    9.3758241+03
     8             *                                                                                     2640    1.2501099+04
     9                 *                                                                                 3300    1.5626374+04




         SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                  0              0            138              0              0              0

       1.1142857+04   9.6428571+03            138            660   3.7142857+02   3.2142857+02

       2.2285714+04   1.9285714+04            138           1320   7.4285714+02   6.4285714+02

       3.3428571+04   2.8928571+04            138           1980   1.1142857+03   9.6428571+02

       4.4571428+04   3.8571428+04            138           2640   1.4857143+03   1.2857143+03

       5.5714286+04   4.8214286+04            138           3300   1.8571429+03   1.6071429+03



         MIN SCALE      MAX SCALE
               1000          72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
        POINT IS LEFT OF SCALE                                                              0               0
     1            *                                                                                       660    1.1142857+04
     2                          *                                                                        1320    2.2285714+04
     3                                        *                                                          1980    3.3428571+04
     4                                                      *                                            2640    4.4571428+04
     5                                                                    *                              3300    5.5714286+04




         SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                  0              0            139              0              0              0

       9.2439560+03   9.6131868+03            139            660   3.0813187+02   3.2043956+02

       1.8487912+04   1.9226374+04            139           1320   6.1626373+02   6.4087912+02

       2.7731868+04   2.8839560+04            139           1980   9.2439560+02   9.6131868+02

       3.6975824+04   3.8452747+04            139           2640   1.2325275+03   1.2817582+03

       4.6219780+04   4.8065934+04            139           3300   1.5406593+03   1.6021978+03



         MIN SCALE      MAX SCALE
               1000          72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
        POINT IS LEFT OF SCALE                                                              0               0
     7         *                                                                                          660    9.2439560+03
     8                     *                                                                             1320    1.8487912+04
     9                                 *                                                                 1980    2.7731868+04
     0                                            *                                                      2640    3.6975824+04
     1                                                        *                                          3300    4.6219780+04
```

```
         SIGMA1       SIGMA2       GAGE NO.            PRESSURE       SENS1     SENS2
                  0             0            331              0              0             0
       1.1498901+04  9.9296703+03            331            660   3.8329670+02  3.3098901+02
       2.2997802+04  1.9859341+04            331           1320   7.6659340+02  6.6197802+02
       3.4496703+04  2.9789011+04            331           1980   1.1498901+03  9.9296703+02
       4.5995604+04  3.9718681+04            331           2640   1.5331868+03  1.3239560+03
       5.7494505+04  4.9648352+04            331           3300   1.9164835+03  1.6549450+03

         MIN SCALE     MAX SCALE
               1000         72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
        POINT IS LEFT OF SCALE                                                                            0              0
     3            *                                                                                     660   1.1498901+04
     4                          *                                                                      1320   2.2997802+04
     5                                        *                                                        1980   3.4496703+04
     6                                                      *                                          2640   4.5995604+04
     7                                                                     *                           3300   5.7494505+04


         SIGMA1       SIGMA2       GAGE NO.            PRESSURE       SENS1     SENS2
                  0             0            332              0              0             0
       9.3494505+03  1.0364835+04            332            660   3.1164835+02  3.4549450+02
       1.8698901+04  2.0729670+04            332           1320   6.2329670+02  6.9098901+02
       2.8048352+04  3.1094505+04            332           1980   9.3494505+02  1.0364835+03
       3.7397802+04  4.1459340+04            332           2640   1.2465934+03  1.3819780+03
       4.6747253+04  5.1824176+04            332           3300   1.5582418+03  1.7274725+03

         MIN SCALE     MAX SCALE
               1000         72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
        POINT IS LEFT OF SCALE                                                                            0              0
     9         *                                                                                        660   9.3494505+03
     0                     *                                                                           1320   1.8698901+04
     1                                 *                                                               1980   2.8048352+04
     2                                            *                                                    2640   3.7397802+04
     3                                                       *                                         3300   4.6747253+04


         SIGMA1       SIGMA2       GAGE NO.            PRESSURE       SENS1     SENS2
                  0             0            333              0              0             0
       1.1498901+04  1.1129670+04            333            660   3.8329670+02  3.7098901+02
       2.2997802+04  2.2259341+04            333           1320   7.6659340+02  7.4197802+02
       3.4496703+04  3.3389011+04            333           1980   1.1498901+03  1.1129670+03
       4.5995604+04  4.4518681+04            333           2640   1.5331868+03  1.4839560+03
       5.7494505+04  5.5648352+04            333           3300   1.9164835+03  1.8549450+03

         MIN SCALE     MAX SCALE
               1000         72000
     ---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
        POINT IS LEFT OF SCALE                                                                            0              0
     5            *                                                                                     660   1.1498901+04
     6                          *                                                                      1320   2.2997802+04
     7                                        *                                                        1980   3.4496703+04
     8                                                      *                                          2640   4.5995604+04
     9                                                                     *                           3300   5.7494505+04
```

```
    SIGMA1      SIGMA2      GAGE NO.          PRESSURE     SENS1      SENS2
             0            0          334             0             0             0

  1.0991209+04 1.1037363+04          334           660  3.6637362+02  3.6791209+02

  2.1982417+04 2.2074725+04          334          1320  7.3274725+02  7.3582417+02

  3.2973626+04 3.3112088+04          334          1980  1.0991209+03  1.1037363+03

  4.3964835+04 4.4149450+04          334          2640  1.4654945+03  1.4716483+03

  5.4956044+04 5.5186813+04          334          3300  1.8318681+03  1.8395604+03
```

```
   MIN SCALE     MAX SCALE
         1000        72000
--------8--------16-------24-------32-------40-------48-------56------64------ 72       PRES.      STRESS
  POINT IS LEFT OF SCALE                                                                     0             0
1           *                                                                              660  1.0991209+04
2                       *                                                                 1320  2.1982417+04
3                                   *                                                     1980  3.2973626+04
4                                                *                                        2640  4.3964835+04
5                                                            *                            3300  5.4956044+04
```

```
    SIGMA1      SIGMA2      GAGE NO.          PRESSURE     SENS1      SENS2
             0            0          143             0             0             0

  1.0747253+04 8.3241758+03          143           660  3.5824176+02  2.7747253+02

  2.1956044+04 1.7986813+04          143          1320  7.3186813+02  5.9956044+02

  3.2934066+04 2.6980220+04          143          1980  1.0978022+03  8.9934066+02

  4.3912088+04 3.5973626+04          143          2640  1.4637363+03  1.1991209+03

  5.4890110+04 4.4967033+04          143          3300  1.8296703+03  1.4989011+03
```

```
   MIN SCALE     MAX SCALE
         1000        72000
--------8--------16-------24-------32-------40-------48-------56------64------ 72       PRES.      STRESS
  POINT IS LEFT OF SCALE                                                                     0             0
7          *                                                                               660  1.0747253+04
8                       *                                                                 1320  2.1956044+04
9                                   *                                                     1980  3.2934066+04
0                                                *                                        2640  4.3912088+04
1                                                            *                            3300  5.4890110+04
```

```
    SIGMA1      SIGMA2      GAGE NO.          PRESSURE     SENS1      SENS2
             0            0          144             0             0             0

  1.0800000+04 7.8000000+03          144           660  3.6000000+02  2.6000000+02

  2.1600000+04 1.5600000+04          144          1320  7.2000000+02  5.2000000+02

  3.2400000+04 2.3400000+04          144          1980  1.0800000+03  7.8000000+02

  4.3200000+04 3.1200000+04          144          2640  1.4400000+03  1.0400000+03

  5.4000000+04 3.9000000+04          144          3300  1.8000000+03  1.3000000+03
```

```
   MIN SCALE     MAX SCALE
         1000        72000
--------8--------16-------24-------32-------40-------48-------56------64------ 72       PRES.      STRESS
  POINT IS LEFT OF SCALE                                                                     0             0
3          *                                                                               660  1.0800000+04
4                       *                                                                 1320  2.1600000+04
5                                   *                                                     1980  3.2400000+04
6                                               *                                         2640  4.3200000+04
7                                                           *                             3300  5.4000000+04
```

```
        SIGMA1        SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0              0           145              0              0              0
      8.0175824+03   7.9252747+03           145            660   2.6725275+02   2.6417582+02
      1.6035165+04   1.5850549+04           145           1320   5.3450549+02   5.2835165+02
      2.4052747+04   2.3775824+04           145           1980   8.0175824+02   7.9252747+02
      3.2070330+04   3.1701099+04           145           2640   1.0690110+03   1.0567033+03
      4.0087912+04   3.9626374+04           145           3300   1.3362637+03   1.3208791+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                            0              0
    9        *                                                                                         660   8.0175824+03
    0                  *                                                                              1320   1.6035165+04
    1                            *                                                                    1980   2.4052747+04
    2                                      *                                                          2640   3.2070330+04
    3                                                *                                                3300   4.0087912+04
```

```
        SIGMA1        SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0              0           146              0              0              0
      1.5356044+04   1.1986813+04           146            660   5.1186813+02   3.9956044+02
      3.0712088+04   2.3973626+04           146           1320   1.0237363+03   7.9912088+02
      4.6068132+04   3.5960439+04           146           1980   1.5356044+03   1.1986813+03
      6.1424176+04   4.7947253+04           146           2640   2.0474725+03   1.5982418+03
      7.6780219+04   5.9934066+04           146           3300   2.5593406+03   1.9978022+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                            0              0
    5                  *                                                                               660   1.5356044+04
    6                                     *                                                           1320   3.0712088+04
    7                                                       *                                         1980   4.6068132+04
    8                                                                           *                     2640   6.1424176+04
       POINT IS RIGHT OF SCALE                                                                        3300   7.6780219+04
```

```
        SIGMA1        SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0              0           147              0              0              0
      9.7714285+03   7.3714286+03           147            660   3.2571428+02   2.4571429+02
      1.9542857+04   1.4742857+04           147           1320   6.5142857+02   4.9142857+02
      2.9314286+04   2.2114286+04           147           1980   9.7714285+02   7.3714285+02
      3.9085714+04   2.9485714+04           147           2640   1.3028571+03   9.8285714+02
      4.8857143+04   3.6857143+04           147           3300   1.6285714+03   1.2285714+03
```

```
        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72      PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                            0              0
    1           *                                                                                      660   9.7714285+03
    2                       *                                                                         1320   1.9542857+04
    3                                   *                                                             1980   2.9314286+04
    4                                               *                                                 2640   3.9085714+04
    5                                                           *                                     3300   4.8857143+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0             148             0              0              0
      1.1182418+04   1.0074725+04             148           660   3.7274725+02   3.3582417+02
      2.2364835+04   2.0149450+04             148          1320   7.4549450+02   6.7164835+02
      3.3547253+04   3.0224176+04             148          1980   1.1182418+03   1.0074725+03
      4.4729670+04   4.0298901+04             148          2640   1.4909890+03   1.3432967+03
      5.5912088+04   5.0373626+04             148          3300   1.8637363+03   1.6791209+03


        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0             0
    7            *                                                                                         660  1.1182418+04
    8                          *                                                                          1320  2.2364835+04
    9                                        *                                                            1980  3.3547253+04
    0                                                      *                                              2640  4.4729670+04
    1                                                                    *                                3300  5.5912088+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0             241             0              0              0
      8.8747253+03   9.0824176+03             241           660   2.9582417+02   3.0274725+02
      1.7749451+04   1.8164835+04             241          1320   5.9164835+02   6.0549450+02
      2.6624176+04   2.7247253+04             241          1980   8.8747252+02   9.0824176+02
      3.5498901+04   3.6329670+04             241          2640   1.1832967+03   1.2109890+03
      4.4373626+04   4.5412088+04             241          3300   1.4791209+03   1.5137363+03


        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0             0
    3          *                                                                                           660  8.8747253+03
    4                     *                                                                               1320  1.7749451+04
    5                                *                                                                    1980  2.6624176+04
    6                                           *                                                         2640  3.5498901+04
    7                                                      *                                              3300  4.4373626+04
```

```
        SIGMA1        SIGMA2       GAGE NO.            PRESSURE       SENS1      SENS2
                 0              0             242             0              0              0
      1.0298901+04   1.0529670+04             242           660   3.4329670+02   3.5098901+02
      2.0597802+04   2.1059341+04             242          1320   6.8659340+02   7.0197802+02
      3.0896703+04   3.1589011+04             242          1980   1.0298901+03   1.0529670+03
      4.1195604+04   4.2118681+04             242          2640   1.3731868+03   1.4039560+03
      5.1494505+04   5.2648352+04             242          3300   1.7164835+03   1.7549450+03


        MIN SCALE      MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0             0
    9            *                                                                                         660  1.0298901+04
    0                         *                                                                           1320  2.0597802+04
    1                                     *                                                               1980  3.0896703+04
    2                                                  *                                                  2640  4.1195604+04
    3                                                               *                                     3300  5.1494505+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE        SENS1      SENS2
             0              0            244               0              0              0

  1.0246154+04   1.0153846+04            244              66   3.4153846+02   3.3846154+02

  2.0492308+04   2.0307692+04            244            1320   6.8307692+02   6.7692307+02

  3.0738461+04   3.0461538+04            244            1980   1.0246154+03   1.0153846+03

  4.0984615+04   4.0615385+04            244            2640   1.3661538+03   1.3538461+03

  5.1230769+04   5.0769231+04            244            3300   1.7076923+03   1.6923077+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72         PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                  0              0
5           *                                                                                             66   1.0246154+04
6                       *                                                                               1320   2.0492308+04
7                                    *                                                                  1980   3.0738461+04
8                                                  *                                                    2640   4.0984615+04
9                                                               *                                       3300   5.1230769+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE        SENS1      SENS2
             0              0            245               0              0              0

  1.0470330+04   1.0401099+04            245             660   3.4901099+02   3.4670330+02

  2.0940659+04   2.0802198+04            245            1320   6.9802197+02   6.9340659+02

  3.0580220+04   3.1134066+04            245            1980   1.0193407+03   1.0378022+03

  4.0773626+04   4.1512088+04            245            2640   1.3591209+03   1.3837363+03

  5.0967033+04   5.1890110+04            245            3300   1.6989011+03   1.7296703+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72         PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                  0              0
1           *                                                                                            660   1.0470330+04
2                       *                                                                               1320   2.0940659+04
3                                    *                                                                  1980   3.0580220+04
4                                                  *                                                    2640   4.0773626+04
5                                                               *                                       3300   5.0967033+04
```

```
    SIGMA1        SIGMA2       GAGE NO.            PRESSURE        SENS1      SENS2
             0              0            247               0              0              0

  1.0325275+04   1.0417582+04            247             660   3.4417582+02   3.4725275+02

  2.0650549+04   2.0835165+04            247            1320   6.8835164+02   6.9450549+02

  3.0975824+04   3.1252747+04            247            1980   1.0325275+03   1.0417582+03

  4.1301099+04   4.1670330+04            247            2640   1.3767033+03   1.3890110+03

  5.1626374+04   5.2087912+04            247            3300   1.7208791+03   1.7362637+03
```

```
    MIN SCALE      MAX SCALE
          1000          72000
---------8---------16--------24--------32--------40--------48--------56-------64------- 72         PRES.       STRESS
   POINT IS LEFT OF SCALE                                                                                  0              0
7           *                                                                                            660   1.0325275+04
8                       *                                                                               1320   2.0650549+04
9                                    *                                                                  1980   3.0975824+04
0                                                  *                                                    2640   4.1301099+04
1                                                               *                                       3300   5.1626374+04
```

```
        SIGMA1        SIGMA2       GAGE NO.           PRESSURE       SENS1      SENS2
                 0              0           248                0              0              0

      1.0186813+04   1.1756044+04           248              660   3.3956044+02   3.9186813+02

      2.0373626+04   2.3512088+04           248             1320   6.7912088+02   7.8373626+02

      3.0560440+04   3.5268132+04           248             1980   1.0186813+03   1.1756044+03

      4.0747253+04   4.7024176+04           248             2640   1.3582418+03   1.5674725+03

      5.0934066+04   5.8780220+04           248             3300   1.6978022+03   1.9593407+03




        MIN SCALE     MAX SCALE
              1000          72000
    ---------8---------16--------24--------32--------40--------48--------56-------64-------- 72        PRES.       STRESS
       POINT IS LEFT OF SCALE                                                                               0            0
    3           *                                                                                         660 1.0186813+04
    4                      *                                                                             1320 2.0373626+04
    5                                  *                                                                 1980 3.0560440+04
    6                                              *                                                     2640 4.0747253+04
    7                                                          *                                         3300 5.0934066+04
```